CERTIFICATE

The TÜV CERT Certification Body for QM Systems of RWTÜV Systems GmbH

hereby certifies in accordance with TÜV CERT procedure that

ELITEGROUP COMPUTER SYSTEMS CO., LTD.
ECS MANUFACTURING (SHENZHEN) CO., LTD.
ELITE TECHNOLOGY (SHENZHEN) CO., LTD.

2F, No. 240, Sec. 1, Nei Hu Road, Taipei, Taiwan 114
No. 22, Alley 38, Lane 91, Sec. 1, Nei Hu Road, Taipei, Taiwan 114
No. 20 & No. 26, Free Trade Zone, Shatoujiao, Shenzhen City, GuangDong Province, China

has established and applies a quality system for

Design, Manufacturing and Sales of Mainboards, Personal Computers, Notebooks and Peripheral Cards

An audit was performed, Report No. **2.5-1585/2000**

Proof has been furnished that the requirements according to

ISO 9001 : 2000 / EN ISO 9001 : 2000 / JIS Q 9001 : 2000 / ANSI/ASQC Q9001 : 2000

are fulfilled. The certificate is valid until **27 January 2007**

Certificate Registration No. **04100 2000 1325**

The company has been certified since **2000**

Deutscher Akkreditierungs Rat
DAR
TGA-ZM-30-96-00

Essen, 04.03.2004

RWTÜV

The TÜV CERT Certification Body for QM Systems of RWTÜV Systems GmbH

10/014d neutral RWTÜV 4.98

040130
ROC, FE1737, RC

ISO14001 CERTIFICATE

Certificate NO.: 05-2001-065

We hereby certify that

ECS Manufacturing(Shenzhen) Co.,Ltd

by reason of its

Environmental Management System

has been awarded this certificate for
compliance with the standard

ISO14001:1996

The Environmental Management System
applies in the following area:

The manufacture of Mother Board and Peripheral Card and interrelated management activities of ECS Manufacturing(Shenzhen) Co.,Ltd. which is located in No.20,Free Trade Zone,Shatuojiao,Shenzhen, P. R.China.

Date of issue: 30th Dec 2001
Date of expiry: 29th Dec 2004
Signed by:

SHENZHEN ENVIRONMENTAL MANAGEMENT SYSTEM CERTIFICATION CENTER

Preface

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Version 1.0

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Federal Communications Commission (FCC)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment onto an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Shielded interconnect cables and a shielded AC power cable must be employed with this equipment to ensure compliance with the pertinent RF emission limits governing this device. Changes or modifications not expressly approved by the system's manufacturer could void the user's authority to operate the equipment.

Declaration of Conformity

This device complies with part 15 of the FCC rules. Operation is subject to the following conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

Canadian Department of Communications

This class B digital apparatus meets all requirements of the Canadian Interference-causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Réglement sur le matériel brouilieur du Canada.

About the Manual

The manual consists of the following:

TABLE OF CONTENTS

Chapter 1
Introducing the Motherboard

Introduction

Thank you for choosing the NFORCE4-A754 motherboard. This motherboard is a high performance, enhanced function motherboard that supports Socket 754 AMD Athlon 64 and Sempron CPUs for high-end business or personal desktop markets.

The NFORCE4-A754 motherboard is based on NVIDIA® nForce4-4X media and communications processor (MCP) for best desktop platform solution. “nForce4-4X” is a single-chip, highly integrated, high performance HyperTransport peripheral controller, unmatched by any other single chip-device controller. This motherboard supports up to 2GB of system memory with PC3200/2700/2100/1600 DDR DIMMs, high resolution graphics via an PCI Express x16 slot, Giga LAN, USB 2.0, 6-channel audio, and SATA support with RAID function.

There is an advanced full set of I/O ports in the rear panel, including PS/2 mouse and keyboard connectors, COM1, LPT1, four USB ports, one optional LAN port, and audio jacks for microphone, line-in, and line-out. This motherboard is designed in an ATX form factor using a four-layer printed circuit board and measures 304 mm x 220 mm.

Feature

Processor

This motherboard uses a 754-pin socket that carries the following features:

- Accommodates AMD Athlon 64 and Sempron CPUs
- Supports high-performance HyperTransport CPU interface

HyperTransport™ Technology is a point-to-point link between two devices, it enables integrated circuits to exchange information at much higher speeds than currently available interconnect technologies.

Chipset

The NVIDIA® nForce4-4X is a single-chip with proven reliability and performance.

- HyperTransport x16 up and down links at up to 1.0 GHz to the AMD Athlon 64 and Sempron CPUs
- PCI 2.3 interface, supporting up to five PCI slots
- Two separate SATA controllers with integrated PHYs, each supporting two drives in master mode
- IEEE 802.3 NVIDIA MAC for 1000BASE-T/100BASE-T/10BASE-T Gigabit/Fsat Ethernet/Ethernet
- USB 2.0 EHCI and USB 1.1 OHCI, supporting up to ten ports
- Fast ATA-133 IDE controller
- AC'97 2.3 interface, supporting S/PDIF pass-through function and standard, enhanced audio functionality

Memory

- Three 184-pin, 2.5V, DDR SDRAM DIMM sockets support up to 2GB
- Support DDR400/333/266/200 unbuffered DDR SDRAM

AC'97 Audio CODEC

- 16-bit Stereo full-duplex CODEC with 48MHz sampling rate
- Compliant with AC'97 2.3 specifications
- Supports double sampling rate (96KHz) of DVD audio playback
- Direct Sound 3D™ compatible

Onboard LAN (optional)

The onboard LAN provides the following features:

- 10/100/1000BASE-T IEEE 802.3 compliant
- Supports GMII, TBI, reduced pin count GMII (RGMII), reduced pin count TBI (RTBI), and serial GMII (SGMII) interfaces
- IEEE 802.3u compliant Auto-Negotiation
- Prevents outgoing packets with spoofed IP source addresses and provides logging/configuration capabilities

Expansion Options

The motherboard comes with the following expansion options:

- One PCI Express x16 slot
- Two PCI Express x1 slots
- Three 32-bit PCI slots
- Two IDE headers which support four IDE devices
- One floppy disk drive interface
- Four 7-pin SATA connectors

This motherboard supports Ultra DMA bus mastering with transfer rates of 133/100/66 MB/s.

Integrated I/O

The motherboard has a full set of I/O ports and connectors:

- Two PS/2 ports for mouse and keyboard
- One serial port
- One parallel port
- Four USB ports
- One LAN port (optional)
- Audio jacks for microphone, line-in and line-out

BIOS Firmware

The motherboard uses Award BIOS that enables users to configure many system fea tures including the following:

- Power management
- Wake-up alarms
- CPU parameters
- CPU and memory timing

The firmware can also be used to set parameters for different processor clock speeds.

Some hardware specifications and software items are subject to change without prior notice.

Motherboard Components

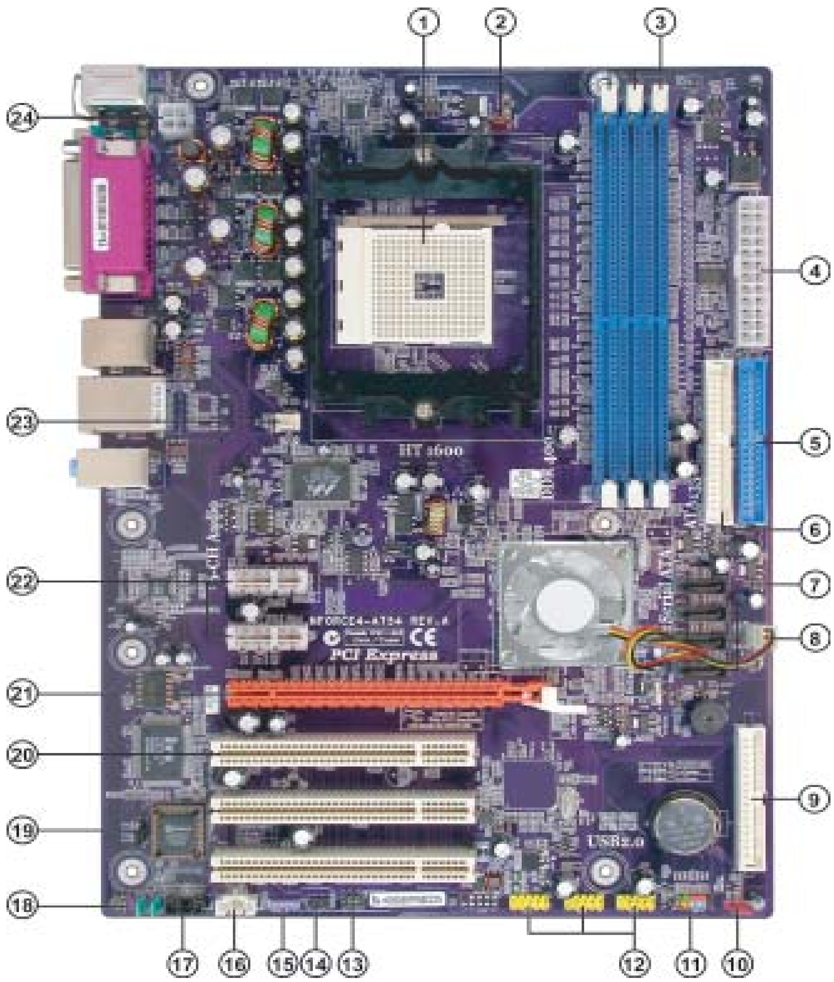


Table of Motherboard Components

LABEL	COMPONENT
1 CPU Socket	Socket 754 for AMD K8 processor
2 CPUFAN1	CPU cooling fan connector
3 DIMM1~3	184-pin DDR SDRAM slots
4 ATX1	Standard 24-pin ATX power connector
5 IDE2	Secondary IDE connector
6 IDE1	Primary IDE connector
7 SATA1~SATA4	Serial ATA connectors
8 NBFAN1*	Northbridge cooling fan connector
9 FDD1	Floppy disk drive connector
10 JP1	Clear CMOS jumper
11 PANEL1	Front Panel switch/LED header
12 USB3 ~ 5	Front Panel USB headers
13 IR1	Infrared header
14 SJ1*	Single color LED header
15 SPDIFO1	SPDIF out header
16 AUXIN1*	Auxiliary in header
17 CDIN1	Analog Audio Input connector
18 AUDIO1	Front panel audio header
19 JP3	BIOS flash protect jumper
20 PCI1~3	32-bit add-on card slots
21 PCIE1	PCI Express x16 graphics card slot
22 PCIE2~3	PCI Express x1 slots
23 CASFAN1	Case cooling fan connector
24 ATX12V	4-pin +12V power connector

"" stands for optional components.*

This concludes Chapter 1. The next chapter explains how to install the motherboard.

Memo

Chapter 2
Installing the Motherboard

Safety Precautions

- Follow these safety precautions when installing the motherboard
- Wear a grounding strap attached to a grounded device to avoid damage from static electricity
- Discharge static electricity by touching the metal case of a safely grounded object before working on the motherboard
- Leave components in the static-proof bags they came in
- Hold all circuit boards by the edges. Do not bend circuit boards

Choosing a Computer Case

There are many types of computer cases on the market. The motherboard complies with the specifications for the ATX system case. First, some features on the motherboard are implemented by cabling connectors on the motherboard to indicators and switches on the system case. Make sure that your case supports all the features required. Secondly, NFORCE4-A754 supports one or two floppy diskette drives and four enhanced IDE drives. Make sure that your case has sufficient power and space for all drives that you intend to install.

Most cases have a choice of I/O templates in the rear panel. Make sure that the I/O template in the case matches the I/O ports installed on the rear edge of the motherboard.

This motherboard carries an ATX form factor of 305 X 220 mm. Choose a case that accommodates this form factor.

Installing the Motherboard in a Case

Refer to the following illustration and instructions for installing the motherboard in a case.

Most system cases have mounting brackets installed in the case, which correspond the holes in the motherboard. Place the motherboard over the mounting brackets and secure the motherboard onto the mounting brackets with screws.

Ensure that your case has an I/O template that supports the I/O ports and expansion slots on your motherboard.



Do not over-tighten the screws as this can stress the motherboard.

Checking Jumper Settings

This section explains how to set jumpers for correct configuration of the motherboard.

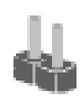
Setting Jumpers

Use the motherboard jumpers to set system configuration options. Jumpers with more than one pin are numbered. When setting the jumpers, ensure that the jumper caps are placed on the correct pins.

The illustrations show a 2-pin jumper. When the jumper cap is placed on both pins, the jumper is SHORT. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is OPEN.

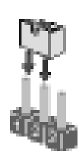


SHORT



OPEN

This illustration shows a 3-pin jumper. Pins 1 and 2 are SHORT



Checking Jumper Settings

The following illustration shows the location of the motherboard jumpers. Pin 1 is labeled.



Jumper Settings

Jumper	Type	Description	Setting (default)
JP1	3-pin	CLEAR CMOS	1-2: NORMAL 2-3: CLEAR Before clearing the CMOS, make sure to turn the system off. JP1 1
JP3	3-pin	BIOS PROTECT	1-2: DISABLE 2-3: ENABLE JP3 1

Connecting Case Components

After you have installed the motherboard into a case, you can begin connecting the motherboard components. Refer to the following:

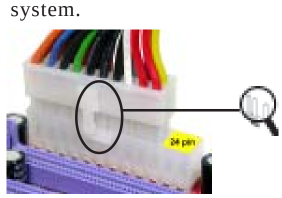
1. Connect the CPU cooling fan cable to **CPUFAN1**.
2. Connect the case cooling fan connector to **CASFAN1.**
3. Connect the Northbridge cooling fan connector to **NBFAN1.**
4. Connect the case switches and indicator LEDs to the **PANEL1**. If there are 3 pins in the case LED cable, connect to **SJ1**.
5. Connect the standard power supply connector to **ATX1**.
6. Connect the auxiliary case power supply connector to **ATX12V**.





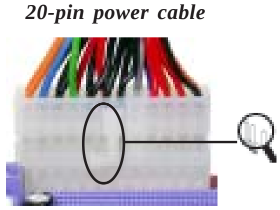
Connecting 20/24-pin power cable

Users please note that the 20-pin and 24-pin power cables can both be connected to the ATX1 connector. With the 20-pin power cable, just align the 20-pin power cable with the pin 1 of the ATX1 connector. However, using 20-pin power cable may cause the system to become unbootable or unstable because of insufficient electricity. A minimum power of 300W is recommended for a fully-configured system.



20-pin power cable

Users please note that when installing 20-pin power cable, the latche of power cable falls on the left side of the ATX1 connector latch, just as the picture shows.



24-pin power cable

Users please note that when installing 24-pin power cable, the latches of power cable and the ATX1 match perfectly.

CPUFAN1/CASFAN1/NBFAN1: FAN Power Connectors

Pin	Signal Name	Function
1	GND	System Ground
2	+12V	Power +12V
3	Sense	Sensor

SJ1: Single-color LED header

Pin	Signal Name
1	ACPI LED
2	ACPI LED
3	5VSB

ACPI LED function



S0	S1	S3	S4/S5
Light	Blinking	Blinking	Dark

ATX1: ATX 24-pin Power Connector

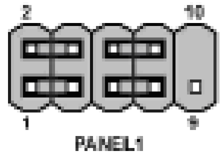
Pin	Signal Name	Pin	Signal Name
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	Ground	15	COM
4	+5V	16	PS_ON
5	Ground	17	COM
6	+5V	18	COM
7	Ground	19	COM
8	PWRGD	20	-5V
9	+5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	COM

ATX12V: ATX 12V Power Connector

Pin	Signal Name
1	Ground
2	Ground
3	+12V
4	+12V

Front Panel Header

The front panel header (PANEL1) provides a standard set of switch and LED headers commonly found on ATX or Micro ATX cases. Refer to the table below for information:



Pin	Signal Name	Function	Pin	Signal Name	Function
1	HD_LED_P	Hard disk LED+	2	FP PWR/SLP	*MSG LED+
3	HD_LED_N	Hard disk LED-	4	FP PWR/SLP	*MSG LED-
5	RST_SW_N	Reset Switch	6	PWR_SW_P	Power Switch
7	RST_SW_P	Reset Switch	8	PWR_SW_N	Power Switch
9	RSVD	Reserved	10	Key	No pin

** MSG LED (dual color or single color)*

Hard Drive Activity LED

Connecting pins 1 and 3 to a front panel mounted LED provides visual indication that data is being read from or written to the hard drive. For the LED to function properly, an IDE drive should be connected to the onboard IDE interface. The LED will also show activity for devices connected to the SCSI (hard drive activity LED) connector.

Power/Sleep/Message waiting LED

Connecting pins 2 and 4 to a single or dual-color, front panel mounted LED provides power on/off, sleep, and message waiting indication.

Reset Switch

Supporting the reset function requires connecting pin 5 and 7 to a momentary-contact switch that is normally open. When the switch is closed, the board resets and runs POST.

Power Switch

Supporting the power on/off function requires connecting pins 6 and 8 to a momentary-contact switch that is normally open. The switch should maintain contact for at least 50 ms to signal the power supply to switch on or off. The time requirement is due to internal de-bounce circuitry. After receiving a power on/off signal, at least two seconds elapses before the power supply recognizes another on/off signal.

Installing Hardware

Installing the Processor

Caution: When installing a CPU heatsink and cooling fan make sure that you DO NOT scratch the motherboard or any of the surface-mount resistors with the clip of the cooling fan. If the clip of the cooling fan scrapes across the motherboard, you may cause serious damage to the motherboard or its components.

On most motherboards, there are small surface-mount resistors near the processor socket, which may be damaged if the cooling fan is carelessly installed.

Avoid using cooling fans with sharp edges on the fan casing and the clips. Also, install the cooling fan in a well-lit work area so that you can clearly see the motherboard and processor socket.

Before installing the Processor

This motherboard automatically determines the CPU clock frequency and system bus frequency for the processor. You may be able to change these settings by making changes to jumpers on the motherboard, or changing the settings in the system Setup Utility. We strongly recommend that you do not over-clock processors or other components to run faster than their rated speed.

Warning: Over-clocking components can adversely affect the reliability of the system and introduce errors into your system. Over-clocking can permanently damage the motherboard by generating excess heat in components that are run beyond the rated limits.

This motherboard has a Socket 754 processor socket. When choosing a processor, consider the performance requirements of the system. Performance is based on the processor design, the clock speed and system bus frequency of the processor, and the quantity of internal cache memory and external cache memory.

CPU Installation Procedure

The following illustration shows CPU installation components.

1. Install your CPU. Pull up the lever away from the socket and lift up to 90-degree angle.
2. Locate the CPU cut edge (the corner with the pin hold noticeably missing). Align and insert the CPU correctly.
3. Press the lever down and apply thermal grease on top of the CPU.
4. Put the CPU Fan down on the retention module and snap the four retention legs of the cooling fan into place.
5. Flip the levers over to lock the heat sink in place and connect the CPU cooling Fan power cable to the CPUFAN connector. This completes the installation.







To achieve better airflow rates and heat dissipation, we suggest that you use a high quality fan with 4800 rpm at least. CPU fan and heatsink installation procedures may vary with the type of CPU fan/heatsink supplied. The form and size of fan/heatsink may also vary.

Installing Memory Modules

This motherboard accommodates three 184-pin 2.5V unbuffered DIMM and supports DDR400/333/266/200 DDR SDRAM. You must install at least one module in any of the four slots. Each module can be installed with 128 MB to 1 GB of memory; the total memory capacity is 2GB.

DDR SDRAM memory module table

Memory module	Memory Bus
DDR200	100MHz
DDR266	133MHz
DDR333	166MHz
DDR400	200MHz

Do not remove any memory module from its antistatic packaging until you are ready to install it on the motherboard. Handle the modules only by their edges. Do not touch the components or metal parts. Always wear a grounding strap when you handle the modules.

Installation Procedure

Refer to the following to install the memory modules.

1. This motherboard supports unbuffered DDR SDRAM only.
2. Push the latches on each side of the DIMM slot down.
3. Align the memory module with the slot. The DIMM slots are keyed with notches and the DIMMs are keyed with cutouts so that they can only be installed correctly.
4. Check that the cutouts on the DIMM module edge connector match the notches in the DIMM slot.
5. Install the DIMM module into the slot and press it firmly down until it seats correctly. The slot latches are levered upwards and latch on to the edges of the DIMM.
6. Install any remaining DIMM modules.

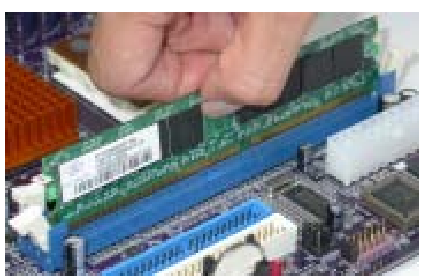


Table A: Unbuffered DIMM Support for 754-pin

Numbers of DIMMs[5]	DIMM 1[4.1.5]	DIMM 2[2]	DIMM 3[2]	Maximum DRAM Speed	
				1 T	2 T[3]
1	single rank	empty	empty	DDR400	DDR400
1	empty	single rank	empty	DDR400	DDR400
1	empty	empty	single rank	DDR400	DDR400
1	double rank	empty	empty	DDR400	DDR400
1	empty	double rank	empty	DDR400	DDR400
1	empty	empty	double rank	DDR400	DDR400
2	single rank	single rank	empty	DDR400	DDR400
2	single rank	double rank	empty	DDR400	DDR400
2	single rank	empty	single rank	DDR400	DDR400
2	single rank	empty	double rank	DDR400	DDR400
2	double rank	single rank	empty	DDR400	DDR400
2	double rank	double rank	empty	DDR333	DDR333
2	double rank	empty	single rank	DDR400	DDR400
2	double rank	empty	double rank	DDR333	DDR333
2	empty	single rank	single rank	DDR333	DDR400
2	empty	single rank	double rank	DDR200	DDR400
2	empty	double rank	single rank	DDR200	DDR400
2	empty	double rank	double rank	DDR200	DDR333
3	single rank	single rank	single rank	DDR333	DDR400
3	single rank	single rank	double rank	DDR200	DDR333
3	single rank	double rank	single rank	DDR200	DDR333
3	single rank	double rank	double rank	DDR200	DDR333[4]
3	double rank	single rank	single rank	DDR333	DDR333
3	double rank	single rank	double rank	DDR200	DDR333[4]
3	double rank	double rank	single rank	DDR200	DDR333[4]
3	double rank	double rank	double rank	DDR200	DDR333[4]

1. *DIMM 1 connects to command/address pins MEMADDA [13:0], MEMBANKA [1:0], MEMRASA_L, MEMCASA_L, MEMWEA_L, MEMCKEA.*
2. *DIMM 2 and 3 connect to command/address pins MEMADDB [13:0], MEMBANKB [1:0], MEMRASB_L, MEMCASB_L, MEMWEB_L, MEMCKEB.*
3. *2T timing is supported in CG and later silicon revisions. Refer to the AMD Athlon™ 64 Processor Power and Thermal Data Sheet, order #30430, for silicon revision determination.*
4. *The maximum allowable DRAM speed under these high load conditions may be reduced with certain DIMMs due to signal integrity degradation.*
5. *For systems using a DIMM implementation, refer only to rows in this table where the entry for the column titled DIMM 3 reads 'empty'.*

Table A: DDR (memory module) QVL (Qualified Vendor List)

The following DDR400 memory modules have been tested and qualified for use with this motherboard.

Size	Vendor	Module Name
128MB	NANYA	NT5DS16M16BT-5
256MB	Infineon	HYB25D256800BT-5B
	Micron	MT46V32M8-5BC
	Micron	MT46V16M8-5 ESB
	NANYA	NT5DS32M8BT-5T
	SAMSUNG	K4H560838D-TCC4
512MB	Apacer	A2S56D30ATP
	Apacer	HYB25D256800BT-5B
	Apacer	V58C2256804SAT5
	NANYA	NT5DS32M8BT-5T
	SAMSUNG	K4H560838D-TCC4
	SAMSUNG	K4H560838E-TCCC

Installing a Hard Disk Drive/CD-ROM/SATA Hard Drive

This section describes how to install IDE devices such as a hard disk drive and a CD-ROM drive.

About IDE Devices

Your motherboard has a primary and secondary IDE channel interface (IDE1 and IDE2). An IDE ribbon cable supporting two IDE devices is bundled with the motherboard.



You must orient the cable connector so that the pin1 (color) edge of the cable correspoinds to the pin 1 of the I/O port connector.

IDE1: Primary IDE Connector

The first hard drive should always be connected to IDE1.





IDE2: Secondary IDE Connector

The second drive on this controller must be set to slave mode. The cinfiguration is the same as IDE1.





IDE devices enclose jumpers or switches used to set the IDE device as MASTER or SLAVE. Refer to the IDE device user's manual. Installing two IDE devices on one cable, ensure that one device is set to MASTER and the other device is set to SLAVE. The documentation of your IDE device explains how to do this.

About UltraDMA

This motherboard supports UltraDMA 133/100/66. UDMA is a technology that accelerates the performance of devices in the IDE channel. To maximize performance, install IDE devices that support UDMA and use 80-pin IDE cables that support UDMA 133/100/66.

About SATA Connectors

Your motherboard features four SATA connectors supporting a total of four drives. SATA refers to Serial ATA (Advanced Technology Attachment) is the standard interface for the IDE hard drives which are currently used in most PCs. These connectors are well designed and will only fit in one orientation. Locate the SATA connectors on the motherboard (see page 19) and follow the illustration below to install the SATA hard drives.

Installing Serial ATA Hard Drives

To install the Serial ATA (SATA) hard drives, use the SATA cable that supports the Serial ATA protocol. This SATA cable comes with an SATA power cable. You can connect either end of the SATA cable to the SATA hard drive or the connector on the motherboard.



SATA cable (optional)



SATA power cable (optional)

Refer to the illustration below for proper installation:

1 Attach either cable end to the connector on the motherboard.
2 Attach the other cable end to the SATA hard drive.
3 Attach the SATA power cable to the SATA hard drive and connect the other end to the power supply.





This motherboard does not support the "Hot-Plug" function.

Installing a Floppy Diskette Drive

The motherboard has a floppy diskette drive (FDD1) interface and ships with a diskette drive ribbon cable that supports one or two floppy diskette drives. You can install a 5.25-inch drive and a 3.5-inch drive with various capacities. The floppy diskette drive cable has one type of connector for a 5.25-inch drive and another type of connector for a 3.5-inch drive.

You must orient the cable connector so that the pin 1 (color) edge of the cable corresponds to the pin 1 of the I/O port connector.

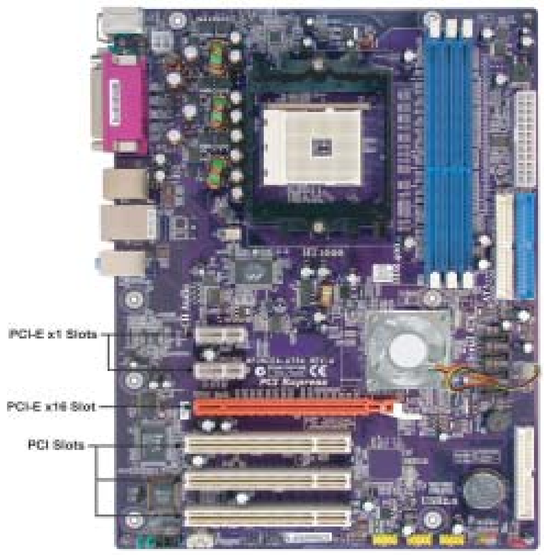
FDD1: Floppy Disk Connector

This connector supports the provided floppy drive ribbon cable. After connecting the single end to the onboard floppy connector, connect the remaining plugs on the other end to the floppy drives correspondingly.



Installing Add-on Cards

The slots on this motherboard are designed to hold expansion cards and connect them to the system bus. Expansion slots are a means of adding or enhancing the motherboard's features and capabilities. With these efficient facilities, you can increase the motherboard's capabilities by adding hardware that performs tasks that are not part of the basic system.



PCIE2~3 Slots The two PCI Express x1 slots are fully compliant to the PCI Express Base Specification revision 1.0a as well.

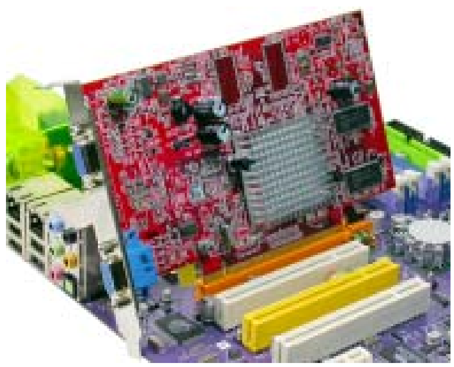
PCIE1 Slot The PCI Express x16 slot is used to install an external PCI Express graphics card that is fully compliant to the PCI Express Base Specification revision 1.0a.

PCI1~3 Slots This motherboard is equipped with three standard PCI slots. PCI stands for Peripheral Component Interconnect and is a bus standard for expansion cards, which for the most part, is a supplement of the older ISA bus standard. The PCI slots on this board are PCI v2.3 compliant.

Before installing an add-on card, check the documentation for the card carefully. If the card is not Plug and Play, you may have to manually configure the card before installation.

Follow these instructions to install an add-on card:

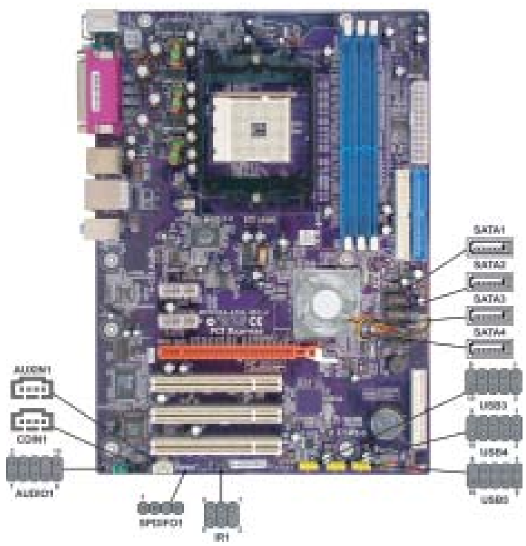
1 Remove a blanking plate from the system case corresponding to the slot you are going to use.
2 Install the edge connector of the add-on card into the expansion slot. Ensure that the edge connector is correctly seated in the slot.
3 Secure the metal bracket of the card to the system case with a screw.



For some add-on cards, for example graphics adapters and network adapters, you have to install drivers and software before you can begin using the add-on card.

Connecting Optional Devices

Refer to the following for information on connecting the motherboard's optional devices:



AUDIO1: Front Panel Audio header

This header allows the user to install auxiliary front-oriented microphone and line-out ports for easier access.

Pin	Signal Name	Function
1	AUD_MIC	Front Panel Microphone input signal
2	AUD_GND	Ground used by Analog Audio Circuits
3	AUD_MIC_BIAS	Microphone Power
4	AUD_VCC	Filtered +5V used by Analog Audio Circuits
5	AUD_F_R	Right Channel audio signal to Front Panel
6	AUD_RET_R	Right Channel Audio signal to Return from Front Panel
7	REVD	Reserved
8	Key	No Pin
9	AUD_F_L	Left Channel Audio signal to Front Panel
10	AUD_RET_L	Left Channel Audio signal to Return from Front Panel

SPDIFO1: SPDIF out header

This is an optional header that provides an S/PDIF (Sony/Philips Digital Interface) output to digital multimedia device through optical fiber or coaxial connector.

Pin	Signal Name	Function
1	SPDIF	SPDIF digital output
2	+5VA	5V analog Power
3	Key	No pin
4	GND	Ground

SATA1~SATA4: Serial ATA connectors

These connectors are use to support the new Serial ATA devices for the highest date transfer rates (150 MB/s), simpler disk drive cabling and easier PC assembly. It eliminates limitations of the current Parallel ATA interface. But maintains register compatibility and software compatibility with Parallel ATA.

Pin	Signal Name	Pin	Signal Name
1	Ground	2	TX+
3	TX-	4	Ground
5	RX-	6	RX+
7	Ground	-	-

USB3~USB5: Front Panel USB headers

The motherboard has four USB ports installed on the rear edge I/O port array. Additionally, some computer cases have USB ports at the front of the case. If you have this kind of case, use auxiliary USB connector to connect the front-mounted ports to the motherboard.

Pin	Signal Name	Function
1	USBPWR	Front Panel USB Power
2	USBPWR	Front Panel USB Power
3	USB_FP_P0-	USB Port 0 Negative Signal
4	USB_FP_P1-	USB Port 1 Negative Signal
5	USB_FP_P0+	USB Port 0 Positive Signal
6	USB_FP_P1+	USB Port 1 Positive Signal
7	GND	Ground
8	GND	Ground
9	Key	No pin
10	NC	Not connected

Please make sure that the USB cable has the same pin assignment as indicated above. A different pin assignment may cause damage or system hang-up.

AUX_IN: Auxiliary In connector (optional)

This connector is an additional line-in audio connector. It allows you to attach a line-in cable when your rear line-in jack is set as line out port for 4-channel function.

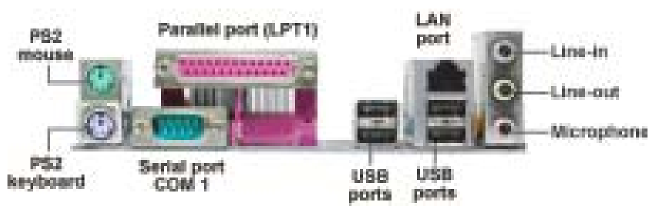
Pin	Signal Name	Function
1	AUX_L	AXU In left channel
2	GND	Ground
3	GND	Ground
4	AUX_R	AXU In right channel

CDIN1: Analog Audio Input connector

Pin	Signal Name	Function
1	CD in_L	CD In left channel
2	GND	Ground
3	GND	Ground
4	CD in_R	CD In right channel

Connecting I/O Devices

The backplane of the motherboard has the following I/O ports:



PS2 Mouse	Use the upper PS/2 port to connect a PS/2 pointing device.
PS2 Keyboard	Use the lower PS/2 port to connect a PS/2 keyboard.
Parallel Port (LPT1)	Use LPT1 to connect printers or other parallel communications devices.
Serial Port (COM1)	Use the COM port to connect serial devices such as mice or fax/modems. COM1 is identified by the system as COM1/3.
LAN Port (optional)	Connect an RJ-45 jack to the LAN port to connect your computer to the Network.
USB Ports	Use the USB ports to connect USB devices.
Audio Ports	Use the three audio ports to connect audio devices. The first jack is for stereo line-in signal. The second jack is for stereo line-out signal. The third jack is for microphone.

This concludes Chapter 2. The next chapter covers the BIOS.

Chapter 3
Using BIOS

About the Setup Utility

The computer uses the latest Award BIOS with support for Windows Plug and Play. The CMOS chip on the motherboard contains the ROM setup instructions for configuring the motherboard BIOS.

The BIOS (Basic Input and Output System) Setup Utility displays the system's configuration status and provides you with options to set system parameters. The parameters are stored in battery-backed-up CMOS RAM that saves this information when the power is turned off. When the system is turned back on, the system is configured with the values you stored in CMOS.

The BIOS Setup Utility enables you to configure:

- Hard drives, diskette drives and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power Management features

The settings made in the Setup Utility affect how the computer performs. Before using the Setup Utility, ensure that you understand the Setup Utility options.

This chapter provides explanations for Setup Utility options.

The Standard Configuration

A standard configuration has already been set in the Setup Utility. However, we recommend that you read this chapter in case you need to make any changes in the future.

This Setup Utility should be used:

- when changing the system configuration
- when a configuration error is detected and you are prompted to make changes to the Setup Utility
- when trying to resolve IRQ conflicts
- when making changes to the Power Management configuration
- when changing the password or making other changes to the Security Setup

Entering the Setup Utility

When you power on the system, BIOS enters the Power-On Self Test (POST) routines. POST is a series of built-in diagnostics performed by the BIOS. After the POST routines are completed, the following message appears:

Press DEL to enter SETUP

Pressing the delete key accesses the BIOS Setup Utility:

Phoenix-AwardBIOS CMOS Setup Utility:

▶ Standard CMOS Features	Load Performance
▶ Advanced BIOS Features	Load Optimized Defaults
▶ Advanced Chipset Features	Set Supervisor Password
▶ Integrated Peripherals	Set User Password
▶ Power Management Setup	Save & Exit Setup
▶ PnP/PCI Configurations	Exit Without Saving
▶ PC Health Status	
Esc: Quit F10: Save & Exit Setup	↑↓→← : Select Item
Time, Date, Hard Disk Type...	

BIOS Navigation Keys

The BIOS navigation keys are listed below:

KEY	FUNCTION
←↑↓→	Move
Enter	Select
+/-/PU/PD	Value
ESC	Exits the current menu
F1	General Help
F2	Item Help
F5	Previous Values
F6	Fail-Safe Defaults
F7	Optimized Defaults
F9	Menu in BIOS
F10	Save

Updating the BIOS

You can download and install updated BIOS for this motherboard from the manufacturer's Web site. New BIOS provides support for new peripherals, improvements in performance, or fixes for known bugs. Install new BIOS as follows:

1. If your motherboard has a BIOS protection jumper, change the setting to allow BIOS flashing.
2. If your motherboard has an item called Firmware Write Protect in Advanced BIOS features, disable it. (Firmware Write Protect prevents BIOS from being overwritten.
3. Create a bootable system disk. (Refer to Windows online help for information on creating a bootable system disk.)
4. Download the Flash Utility and new BIOS file from the manufacturer's Web site. Copy these files to the system diskette you created in Step 3.
5. Turn off your computer and insert the system diskette in your computer's diskette drive. (You might need to run the Setup Utility and change the boot priority items on the Advanced BIOS Features Setup page, to force your computer to boot from the floppy diskette drive first.)
6. At the A:\ prompt, type the Flash Utility program name and press <Enter>.
7. Type the filename of the new BIOS in the "File Name to Program" text box. Follow the onscreen directions to update the motherboard BIOS.
8. When the installation is complete, remove the floppy diskette from the diskette drive and restart your computer. If your motherboard has a Flash BIOS jumper, reset the jumper to protect the newly installed BIOS from being overwritten.

Using BIOS

When you start the Setup Utility, the main menu appears. The main menu of the Setup Utility displays a list of the options that are available. A highlight indicates which option is currently selected. Use the cursor arrow keys to move the highlight to other options. When an option is highlighted, execute the option by pressing <Enter>.

Some options lead to pop-up dialog boxes that prompt you to verify that you wish to execute that option. Other options lead to dialog boxes that prompt you for information.

Some options (marked with a triangle ▶) lead to submenus that enable you to change the values for the option. Use the cursor arrow keys to scroll through the items in the submenu.

In this manual, default values are enclosed in parenthesis. Submenu items are denoted by a triangle ▶.

Standard CMOS Features

This option displays basic information about your system.

Phoenix-AwardBIOS CMOS Setup Utility
Standard CMOS Features

Date (mm:dd:yy)	Wed, Oct. 25 2004	Item Help
Time (hh:mm:ss)	9 : 33 : 26	Menu Level ▶
▶ IDE Channel 0 Master	[WDC WD800bb-22FJA0]	Change the day, month, year and century
▶ IDE Channel 0 Slave	[None]	
▶ IDE Channel 1 Master	[None]	
▶ IDE Channel 1 Slave	[None]	
▶ IDE Channel 2 Master	[None]	
▶ IDE Channel 3 Master	[None]	
▶ IDE Channel 4 Master	[None]	
▶ IDE Channel 5 Master	[None]	
Drive A	[1.44M, 3.5 in.]	
Floppy 3 Mode Select	[Disabled]	
Video	[EGA/VGA]	
Halt On	[All, But Keyboard]	
Base Memory	640K	

↑↓→← : Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1: General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Date and Time

The Date and Time items show the current date and time on the computer. If you are running a Windows OS, these items are automatically updated whenever you make changes to the Windows Date and Time Properties utility.

▶IDE Devices (None)

Your computer has two IDE channels (Primary and Secondary) and each channel can be installed with one or two devices (Master and Slave). Use these items to configure each device on the IDE channel.

Press <Enter> to display the IDE submenu:

Phoenix-AwardBIOS CMOS Setup Utility
IDE Channel 0 Slave

IDE HDD Auto-Detection	[Press Enter]	Item Help
IDE Channel 0 Slave	[Auto]	Menu Level ▶▶
Access Mode	[Auto]	To auto-detect the HDD's size, head... on this channel
Capacity	0MB	
Cylinder	0	
Head	0	
Precomp	0	
Landing Zone	0	
Sector	0	

↑↓→← : Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1: General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

<u>IDE HDD Auto-Detection</u>

Press <Enter> while this item is highlighted to prompt the Setup Utility to automatically detect and configure an IDE device on the IDE channel.

If you are setting up a new hard disk drive that supports LBA mode, more than one line will appear in the parameter box. Choose the line that lists LBA for an LBA drive.

IDE Channel 0/1/2/3/4/5 Master & IDE Channel 0/1 Slave

Leave this item at Auto to enable the system to automatically detect and configure IDE devices on the channel. If it fails to find a device, change the value to Manual and then manually configure the drive by entering the characteristics of the drive in the items described below.

Before attempting to configure a hard disk drive, ensure that you have the configuration information supplied by the manufacturer of your hard drive. Incorrect settings can result in your system not recognizing the installed hard disk.

Access Mode (Auto)

This item defines ways that can be used to access IDE hard disks such as LBA (Large Block Addressing). Leave this value at Auto and the system will automatically decide the fastest way to access the hard disk drive.

Press <Esc> to return to the Standard CMOS Features page.

Drive A (1.44M, 3.5 in.)

These items define the characteristics of any diskette drive attached to the system. You can connect one or two diskette drives.

Floppy 3 Mode Select (Disabled)

Floppy 3 Mode refers to a 3.5-inch diskette with a capacity of 1.2MB. Floppy 3 mode is sometimes used in Japan.

Video (EGA/VGA)

This item defines the video mode of the system. This motherboard has a built-in VGA graphics system; you must leave this item at the default value.

Halt On (All, But Keyboard)

This item defines the operation of the system POST (Power On Self Test) routine. You can use this item to select which types of errors in the POST are sufficient to halt the system.

Base Memory, Extended Memory, and Total Memory

These items are automatically detected by the system at start up time. These are display-only fields. You cannot make changes to these fields.

Advanced BIOS Features

This option defines advanced information about your system.

```
Phoenix-AwardBIOS CMOS Setup Utility
Advanced BIOS Features

▶ Hard Disk Boot Priority          [Press Enter]     Item Help
  CPU Internal Cache               [Enabled]
  External Cache                   [Enabled]         Menu Level ▶
  Quick Power On Self Test         [Enabled]
  First Boot Device                [Floppy]
  Second Boot Device               [Hard Disk]
  Third Boot Device                [CDROM]
  Boot Other Device                [Enabled]
  Swap Floppy Drive                [Disabled]
  Boot Up Floppy Seek              [Disabled]
  Boot Up NumLock Status           [On]
  Gate A20 Option                  [Fast]
  ATA 66/100 IDE Cable Msg.        [Enabled]
  Typematic Rate Setting           [Disabled]
X Typematic Rate (Chars/Sec0       6
X Typematic Delay (Msec)           250
  Security Option                  [Setup]
  APIC Mode                        [Enabled]

↑↓→← : Move  Enter: Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1: General Help
     F5:Previous Values     F6:Fail-Safe Defaults     F7:Optimized Defaults
```

▶Hard Disk Boot Priority (Press Enter)

Scroll to this item and press <Enter> to view the following screen:

```
Phoenix-AwardBIOS CMOS Setup Utility
Hard Disk Boot Priority

1. Cho M    :WDC WD800BB-22F JA0          Item Help
2. Bootable Add-in Cards
                                          Menu Level ▶▶
                                          Use < ↑ > or < ↓ >
                                          to select a device, then
                                          press <+> to move it
                                          up, or <-> to move it
                                          down the list.  Press
                                          <ESC> to exit this
                                          menu.

↑↓→← : Move       PU/PD+/-/:Change Priority  F10:Save  ESC:Exit
```

CPU Internal Cache (Enabled)

All processors that can be installed in this motherboard use internal level 1 (L1) cache memory to improve performance. Leave this item at the default value for better performance.

External Cache (Enabled)

Most processors that can be installed in this system use external level 2 (L2) cache memory to improve performance. Leave this item at the default value for better performance.

Quick Power On Self Test (Enabled)

Enable this item to shorten the power on testing (POST) and have your system start up faster. You might like to enable this item after you are confident that your system hardware is operating smoothly.

First/Second/Third Boot Device (Floppy/Hard Disk/CDROM)

Use these three items to select the priority and order of the devices that your system searches for an operating system at start-up time.

Boot Other Device (Enabled)

When enabled, the system searches all other possible locations for an operating system if it fails to find one in the devices specified under the First, Second, and Third boot devices.

Swap Floppy Drive [Disabled]

If you have two floppy diskette drives in your system, this item allows you to swap the assigned drive letters so that drive A becomes drive B, and drive B becomes drive A.

Boot Up Floppy Seek (Disabled)

If this item is enabled, it checks the size of the floppy disk drives at start-up time. You don't need to enable this item unless you have a legacy diskette drive with 360K capacity.

Boot Up NumLock Status (On)

This item defines if the keyboard Num Lock key is active when your system is started.

Gate A20 Option (Fast)

This item defines how the system handles legacy software that was written for an earlier generation of processors. Leave this item at the default value.

ATA 66/100 IDE Cable Msg. (Enabled)

This item enables or disables the display of the ATA 66/100 Cable MSG.

Typematic Rate Setting (Disabled)

If this item is enabled, you can use the following two items to set the typematic rate and the typematic delay settings for your keyboard.

- **Typematic Rate (Chars/Sec)**: Use this item to define how many characters per second are generated by a held-down key.
- **Typematic Delay (Msec):** Use this item to define how many milliseconds must elapse before a held-down key begins generating repeat characters.

Security Option (Setup)

If you have installed password protection, this item defines if the password is required at system start up, or if it is only required when a user tries to enter the Setup Utility.

APIC Mode (Enabled)

This item allows you to enable or disable the APIC (Advanced Programmable Interrupt Controller) mode. APIC provides symmetric multi-processing (SMP) for systems, allowing support for up to 60 processors.

OS Select For DRAM > 64 MB (Non-OS2)

This item is only required if you have installed more than 64 MB of memory and you are running the OS/2 operating system. Otherwise, leave this item at the default.

Full Screen LOGO Show (Enabled)

Enable or disable the full screen logo during boot-up

Small Logo (EPA) Show (Disabled)

Enables or disables the display of the EPA logo during boot.

Summary Screen Show (Enabled)

This item determines whether the summary system information will be showed during boot-up.

Advanced Chipset Features

These items define critical timing parameters of the motherboard. You should leave the items on this page at their default values unless you are very familiar with the technical specifications of your system hardware. If you change the values incorrectly, you may introduce fatal errors or recurring instability into your system.

Phoenix-AwardBIOS CMOS Setup Utility
Advanced Chipset Features

CPU Frequency	[200.0]	Item Help
HT Frequency	[4X]	Menu Level ▶
HT Width	[▼16 ▲16]	DRAM timing and control
▶ DRAM Configuration	[Press Enter]	
CPU Spread Sprectrum	[Center Spread]	
SATA Spread Sprectrum	[Disabled]	
PCIE Spread Sprectrum	[Disabled]	
CPU Voltage Control	[Normal]	
DIMM Voltage Control	[2.63V]	
System BIOS Cacheable	[Disabled]	

↑↓→←: Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1: General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

CPU Frequency (200.0)

This item enables users to manually over-clock the CPU frequency, ranging from 200.0 to 209.5

HT Frequency (4X)

This item enables users to manually set up the HyperTransport frequency, ranging from Auto, 1x, to 5x.

HT Width (▼ 16 ▲ 16)

This item enables users to manually set up the HyperTransport width, width ranging from 8 down 8 up to 16 down 16 up.

▶DRAM Configuration (Press Enter)

Scroll to this item and press <Enter> to view the following screen:

Phoenix-AwardBIOS CMOS Setup Utility
DRAM Configuration

Timing Mode	[Auto]	Item Help
X Memlock index value (Mhz)	200Mhz	Menu Level ▶▶
X CAS# latency (Tcl)	2.5	Places an artificial memory clock limit on the system. Memory is prevented from running faster than this frequency
X Min RAS# active time (Tras)	8T	
X RAS# to CAS# delay(Trcd)	4T	
X Row precharge Time (Trp)	4T	

↑↓→←: Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1: General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Timing Mode (Auto)

This item enables you to specify the DRAm timing mode to be configured automatically or manually.

- ***Memclock index value (Mhz) (200Mhz)***: When DDR Timing Setting by is set to Manual, use this item to set the DRAM frequency.
- ***CAS# latency (Tcl) (2.5)***: This item determines the operation of DDR SDRAM memory CAS (column address strobe). It is recommended that you leave this item at the default value. The 2T setting requires faster memory that secifically supports this mode.
- ***Min RAS# active time (Tras) (8T)***: This item specifies the minumum RAS# active time.
- ***RAS# to CAS# delay (Trcd) (4T)***: This item specifies the RAS# to CAS# delay to Rd/Wr command to the same bank.
- ***Row Precharge Time (Trp) (4T)***: This item specifies the Row precharge to Active or Auto-Refresh of the same bank.

Press <Esc> to return to the Advanced Chipset Features page.

CPU Spread Spectrum (Center Spread)

This item, when enabled, can significantly reduce the EMI (Electromagnetic Interference) generated by the CPU.

SATA Spread Spectrum (Disabled)

This item, when enabled, can significantly reduce the EMI (Electromagnetic Interference) generated by the SATA.

PCIE Spread Spectrum (Disabled)

This item, when enabled, can significantly reduce the EMI (Electromagnetic Interference) generated by the PCIE.

CPU Voltage Control (Normal)

This item enables users to tune up the CPU voltage manually, ranging from Normal, +25mV, +50mV, +75mV, +100mV, +125mV, ... to +375mV.

DIMM Voltage Control (2.63V)

This item enables users to tune up the DDR DIMM voltage manually, ranging from 2.55V, 2.63V, 2.71V, 2.79V, 2.87V, 2.95V, 3.03, to 3.11V.

System BIOS Cacheable (Disabled)

This item enabels users to enable or disable the system BIOS cache.

Integrated Peripherals

These options display items that define the operation of peripheral components on the system's input/output ports.

```
Phoenix-AwardBIOS CMOS Setup Utility
Integrated Peripherals

► IDE Function Setup      [Press Enter]        Item Help
► RAID Config             [Press Enter]
► Onboard Device          [Press Enter]        Menu Level ►►
► Super IO Device         [Press Enter]

↑↓→←: Move  Enter: Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1: General Help
F5:Previous Values    F6:Fail-Safe Defaults    F7:Optimized Defaults
```

► IDE Function Setup (Press Enter)

Scroll to this item and press <Enter> to view the following screen:

```
Phoenix-AwardBIOS CMOS Setup Utility
IDE Function Setup

OnChip IDE Channel0        [Enabled]       Item Help
Primary Master PIO         [Auto]
Primary Slave PIO          [Auto]          Menu Level ►►
Primary Master UDMA        [Auto]
Primary Slave UDMA         [Auto]
OnChip IDE Channel1        [Enabled]
Secondary Master PIO       [Auto]
Secondary Slave PIO        [Auto]
Secondary Master UDMA      [Auto]
Secondary Slave UDMA       [Auto]
IDE DMA transfer access    [Enabled]
Serial-ATA 1               [Enabled]
Serial-ATA 2               [Enabled]
IDE Prefetch Mode          [Enabled]
IDE HDD Block Mode         [Enabled]

↑↓→← : Move  Enter: Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1: General Help
F5:Previous Values    F6:Fail-Safe Defaults    F7:Optimized Defaults
```

On-Chip IDE Channel 0/1 (Enabled)

Use these items to enable or disable the PCI IDE channels that are integrated on the motherboard.

Primary/Secondary Master/Slave PIO (Auto)

Each IDE channel supports a master device and a slave device. These four items let you assign the kind of PIO (Programmed Input/Output) was used by the IDE devices. Choose Auto to let the system auto detect which PIO mode is best, or select a PIO mode from 0-4.

Primary/Secondary Master/Slave UltraDMA (Auto)

Each IDE channel supports a master device and a slave device. This motherboard supports UltraDMA technology, which provides faster access to IDE devices.

If you install a device that supports UltraDMA, change the appropriate item on this list to Auto. You may have to install the UltraDMA driver supplied with this motherboard in order to use an UltraDMA device.

IDE DMA transfer access (Enabled)

This item allows you to enable the transfer access of the IDE DMA then burst onto the PCI bus and nonburstable transactions do not.

Serial-ATA 1/2 (Enabled)

This item allows you to enable or disable the onboard SATA 1/2 devices.

IDE Prefetch Mode (Enabled)

The onboard IDE drive interface supports IDE prefetching, for faster drive access. If you install a primary and secondary add-in IDE interface, set this field to Disabled if the interface does not support prefetching.

IDE HDD Block Mode (Enabled)

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode, select Enabled for automatic detection of the optimal number of block read/write per sector the drive can support.

Press <Esc> to return to the Integrated Peripherals page.

▶ RAID Config (Press Enter)

Scroll to this item and press <Enter> to view the following screen:

Phoenix-AwardBIOS CMOS Setup Utility
RAID Config

	RAID Enable	[Disabled]	Item Help
x	IDE Primary Master RAID	Disabled	Menu Level ►►
x	IDE Primary Slave RAID	Disabled	
x	IDE Secondary Master RAID	Disabled	
x	IDE Secondary Slave RAID	Disabled	
x	SATA 1 Primary RAID	Disabled	
x	SATA 1 Secondary RAID	Disabled	
x	SATA 2 Primary RAID	Disabled	
x	SATA 2 Secondary RAID	Disabled	

↑↓→← :Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1: General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

RAID Enable (Disabled)

This item allows you to enable or disable the onboard RAID function of RAID function of RAID supporting devices.

- ***IDE Primary/Secondary Master/Slave RAID (Disabled)***: These four items enable or disable the IDE Primary/Secondary RAID.
- ***SATA 1/2 Primary/Secondary RAID (Disabled):*** These four items enable or disable the SATA 1/2 Primary/Secondary RAID.

Press <Esc> to return to the Integrated Peripherals page.

▶ Onboard Device (Press Enter)

Scroll to this item and press <Enter> to view the following screen:

Phoenix-AwardBIOS CMOS Setup Utility
Onboard Device

Init Display First	[PCI Slot]	Item Help
OnChip USB	[V1.1+V2.0V]	
USB Keyboard Support	[Enabled]	Menu Level ►►
USB Mouse Support	[Enabled]	
AC97 Audio	[Auto]	
Onboard PCI 1394	[Enabled]	
Onboard Giga Lan	[Auto]	

↑↓→←: Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1: General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Init Display First (PCI Slot)

This item allows users to set the initial display device for the system.

Onchip USB (V1.1+V2.0)

This item enables users to enable or disable the onchip USB function, setting it to be USB1.1 or USB2.0 compatible.

USB Keyboard Support (Enabled)

Enables this item if you plan to use a keyboard connected through the USB port in a legacy operating system (such as DOS) that does not support Plug and Play.

USB Mouse Support (Enabled)

Enable this item if you plan to use a mouse connected through the USB port in a legacy operating system (such as DOS) that does not support Plug and Play.

AC' 97 AUDIO (Auto)

Enables and disables the onboard audio chip. Disable this item if you are going to install a PCI audio add-in card.

Onboard PCI 1394 (Enabled)

Enables or disables the onboard IEEE 1394 function.

Onboard Giga LAN (Auto)

Enables or disables the onboard Giga LAN function.

Press <Esc> to return to the Integrated Peripherals page.

▶ SuperIO Device (Press Enter)

Scroll to this item and press <Enter> to view the following screen:

Phoenix-AwardBIOS CMOS Setup Utility
SuperIO Device

Onboard FDC Controller	[Enabled]	Item Help
Onboard Serial Port 1	[3F8/IRQ4]	
Onboard Serial Port 2	[2F8/IRQ3]	Menu Level ▶▶
UART Mode Select	[IRDA]	
UR2 Duplex Mode	Half	
Onboard Parallel Port	[378/IRQ7]	
Parallel Port Mode	[ECP]	
ECP Mode Use DMA	3	

↑↓→←: Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1: General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Onboard FDC Controller (Enabled)

This option enables the onboard floppy disk drive controller.

Onboard Serial Port 1 (3F8/IRQ4, 2F8/IRQ3)

This option is used to assign the I/O address and interrupt request (IRQ) for onboard serial port 1/2.

UART Mode Select (IRDA)

This field is available if the Onboard Serial Port 2 field is set to any option but Disabled. . UART Mode Select enables you to select the infrared communication protocol-Normal (default), IrDA, or ASKIR.

- ***UR2 Duplex Mode (Half)***: This field is available when UART Mode is set to either ASKIR or IrDA. This item enables you to determine the infrared function of the onboard infrared chip. The options are Full and Half (default). Full-duplex means that you can transmit and send information simultaneously. Half-duplex is the transmission of data in both directions, but only one direction at a time.

Onboard Parallel Port (378/IRQ7)

This option is used to assign the I/O address and interrupt request (IRQ) for the onboard parallel port.

Parallel Port Mode (ECP)

Enables you to set the data transfer protocol for your parallel port. There are four options: SPP (Standard Parallel Port), EPP (Enhanced Parallel Port), ECP (Extended Capabilities Port) and ECP+EPP.

SPP allows data output only. Extended Capabilities Port (ECP) and Enhanced Parallel Port (EPP) are bi-directional modes, allowing both data input and output. ECP and EPP modes are only supported with EPP- and ECP-aware peripherals.

- ***ECP Mode Use DMA (3):*** When the onboard parallel port is set to ECP mode, the parallel port can use DMA 3 or DMA 1.

Press <Esc> to return to the Integrated Peripherals page.

Power Management Setup

This option lets you control system power management. The system has various power-saving modes including powering down the hard disk, turning off the video, suspending to RAM, and software power down that allows the system to be automatically resumed by certain events.

Phoenix-AwardBIOS CMOS Setup Utility
Power Management Setup

	ACPI Suspend Type	[S3(STR)]	Item Help
	Video Off Method	[DPMS Support]	
	HDD Power Down	[Disabled]	Menu Level ►
	HDD Down In Suspend	[Disabled]	
	Soft-Off by PBTN	[Instant-Off]	
	Power On By Button	[Disabled]	
	Power On By Mouse	[Disabled]	
	Power On By Keyboard	[Disabled]	
X	KB Power ON Password	Enter	
X	Hot Key Power ON	Ctrl-F1	
	PWRON After PWR-Fail	[Off]	
	Resume By PCI PME	[Enabled]	
	Resume By Ring	[Disabled]	
	Power-On by Alarm	[Disabled]	
X	Day of Month Alarm	0	
X	Time (hh:mm:ss) Alarm	0 : 0 : 0	
	AMD K8 Cool'n'Quiet control	[Auto]	
	Hammer Fid control	[StartUp]	

↑↓→← : Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1: General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

ACPI Suspend Type (S3(STR))

Use this item to define how your system suspends. In the default, S3 (STR), the suspend mode is a suspend to RAM, i.e., the system shuts down with the exception of a refresh current to the system memory.

Video Off Method (DPMS Supported)

This item defines how the video is powered down to save power. This item is set to DPMS (Display Power Management Software) by default.

HDD Power Down (Disabled)

The IDE hard drive will spin down if it is not accessed within a specified length of time.

HDD Down In Suspend (Disabled)

This item enables or disables whether the IDE hard drive to be down in suspend mode.

Soft-Off by PBTN (Instant-Off)

Under ACPI (Advanced Configuration and Power management Interface) you can create a software power down. In a software power down, the system can be resumed by Wake Up Alarms. This item lets you install a software power down that is controlled by the power button on your system. If the item is set to Instant-Off, then the power button causes a software power down. If the item is set to Delay 4 Sec. then you have to hold the power button down for four seconds to cause a software power down.

Power On By Button (Enabled)

Enable or disable the function of waking up the system by the power-on button.

Power On By Mouse (Enabled)

Enable or disable the function of waking up the system by the mouse activity.

Power On By Keyboard (Enabled)

Enable or disable the function of waking up the system by the keyboard activity.

- **KB Power ON Password (Enter)**:Use this item to decide whether to enter the password when waking from keyboard.
- **Hot Key Power ON (Ctrl+F1)**: Use this item to allocate the hot key to wake up the system.

PWRON After PWR-Fail (Off)

This item enables your computer to automatically restart or return to its last operating status.

Resume By PCI PME (Enabled)

This item allows users to enable or disable PCI activity to wake up the system from a power saving mode.

Resume By Ring (Disabled)

This item allows users to enable or disable LAN or modem activity to wake up the system from a power saving mode.

Power-On by Alarm (Disabled)

This item allows users to enable or disable the alarm to wake up the system. If set to Enabled, users can specify the specific day of month and the exact time to power up the system.

AMD K8 Cool'n'Quiet control (Auto)

This item helps the system to lower the frequency when CPU idles. When the frequency decreases, the temperature will drop automatically as well.

Hammer Fid control (StartUp)

This item allows users to set the CPU fid value manually, ranging from x4 to x21.

PNP/PCI Configurations

These options configure how PnP (Plug and Play) and PCI expansion cards operate in your system. Both the the ISA and PCI buses on the motherboard use system IRQs (Interrup ReQuests) and DMAs (Direct Memory Access). You must set up the IRQ and DMA assignments correctly through the PnP/PCI Configurations Setup utility for the motherboard to work properly. Selecting PnP/PCI Configurations on the main program screen displays this menu:

```
              Phoenix-AwardBIOS CMOS Setup Utility
                     PnP/PCI Configurations

  Reset Configuration Data   [Disabled]     | Item Help
                                            |
  Resources Controlled By    [Auto(ESCD)]   | Menu Level      ►►
x IRQ Resources              Press Enter    | Default is Disabled. Select
                                            | Enabled to reset Extended
  PCI/VGA Palette Snoop      [Disabled]     | System Configuration Data
                                            | ESCD) when you exit Setup
  ** PCI Express relative items**           | if you have installed a new
  Maximum Payload Size       [4096]         | add-on and the system
                                            | reconfiguration has caused
                                            | such a serious conflict that
                                            | the OS cannot boot

↑↓→←: Move  Enter: Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1: General Help
   F5:Previous Values     F6:Fail-Safe Defaults     F7:Optimized Defaults
```

Reset Configuration Data (Disabled)

If you enable this item and restart the system, any Plug and Play configuration data stored in the BIOS Setup is cleared from memory.

Resources Controlled By Auto (Auto(ESCD))

You should leave this item at the default Auto (ESCD). Under this setting, the system dynamically allocates resources to Plug and Play devices as they are required.

If you cannot get a legacy ISA (Industry Standard Architecture) expansion card to work properly, you might be able to solve the problem by changing this item to Manual, and then opening up the IRQ Resources submenu.

- **IRQ Resources [Press Enter]:** In the IRQ Resources submenu, if you assign an IRQ to Legacy ISA, then that Interrupt Request Line is reserved for a legacy ISA expansion card. Press <Esc> to close the IRQ Resources submenu.

PCI/VGA Palette Snoop (Disabled)

This item is designed to overcome problems that can be caused by some non-standard VGA cards. This board includes a built-in VGA system that does not require palette snooping so you must leave this item disabled.

Maximum Payload Size (4096)

This item specifies the maximum payload size for the PCI Express function.

PC Health Status

On motherboards that support hardware monitoring, this item lets you monitor the parameters for critical voltages, temperatures and fan speeds.

Phoenix-AwardBIOS CMOS Setup Utility
PC Health Status

Shutdown Temperature	[Disabled]	Item Help
CPU Vcore Voltage	1.48V	Menu Level ▶
Vcc 3.3V	3.31V	
Vcc 2.5V	2.41V	
Vcc 1.5V	1.45V	
Vcc +12V	11.77V	
Vcc 5V	5.08V	
Voltage Battery	2.99V	
System Temperature	38°C	
CPU Temperature	53°C	
CPUFAN1 Speed	2481 RPM	
CKFAN1 Speed	6250 RPM	
CASFAN1 Speed	0 RPM	

↑↓→← : Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1: General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Shutdown Temperature (Disabled)

Enables you to set the maximum temperature the system can reach before powering down.

System Component Characteristics

These fields provide you with information about the systems current operating status. You cannot make changes to these fields.

- CPU Vcore Voltage
- Voltage Battery
- System Temperature
- CPU Temperature
- CPUFAN1 Speed
- CKFAN1 Speed
- CASFAN1 Speed

Load Performance

This option opens a dialog box that lets you install performance defaults for all appropriate items in the Setup Utility: Press <Y> and the <Enter> to install the defaults. Press <N> and then <Enter> to not install the defaults.

Warning: To load Best Performance settings may make your system become unstable or unbootable.

Load Optimized Defaults

This option opens a dialog box that lets you install optimized defaults for all appropriate items in the Setup Utility. Press <Y> and then <Enter> to install the defaults. Press <N> and then <Enter> to not install the defaults. The optimized defaults place demands on the system that may be greater than the performance level of the components, such as the CPU and the memory. You can cause fatal errors or instability if you install the optimized defaults when your hardware does not support them. If you only want to install setup defaults for a specific option, select and display that option, and then press <F7>.

Set Supervisor/User Password

When this function is selected, the following message appears at the center of the screen to assist you in creating a password.

ENTER PASSWORD

Type the password, up to eight characters, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection.

To disable password, just press <Enter> when you are prompted to enter password. A message will confirm the password being disabled. Once the password is disabled, the system will boot and you can enter BIOS Setup freely.

PASSWORD DISABLED

If you have selected "**System**" in "Security Option" of "BIOS Features Setup" menu, you will be prompted for the password every time the system reboots or any time you try to enter BIOS Setup.

If you have selected "**Setup**" at "Security Option" from "BIOS Features Setup" menu, you will be prompted for the password only when you enter BIOS Setup.

Supervisor Password has higher priority than User Password. You can use Supervisor Password when booting the system or entering BIOS Setup to modify all settings. Also you can use User Password when booting the system or entering BIOS Setup but can not modify any setting if Supervisor Password is enabled.

Save & Exit Setup

Highlight this item and press <Enter> to save the changes that you have made in the Setup Utility and exit the Setup Utility. When the Save and Exit dialog box appears, press <Y> to save and exit, or press <N> to return to the main menu.

Exit Without Saving

Highlight this item and press <Enter> to discard any changes that you have made in the Setup Utility and exit the Setup Utility. When the Exit Without Saving dialog box appears, press <Y> to discard changes and exit, or press <N> to return to the main menu.

If you have made settings that you do not want to save, use the "Exit Without Saving" item and press <Y> to discard any changes you have made.

This concludes Chapter 3. Refer to the next chapter for information on the software supplied with the motherboard.

Memo

Chapter 4
Using the Motherboard Software

About the Software CD-ROM

The support software CD-ROM that is included in the motherboard package contains all the drivers and utility programs needed to properly run the bundled products. Below you can find a brief description of each software program, and the location for your motherboard version. More information on some programs is available in a README file, located in the same directory as the software.

Never try to install all software from folfer that is not specified for use with your motherboard.

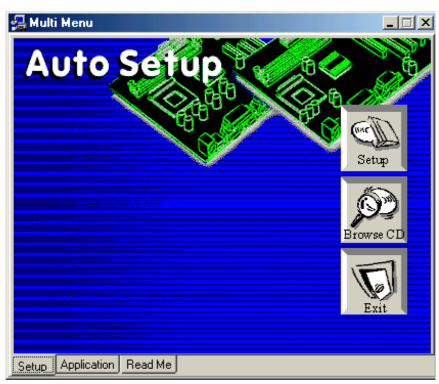
Before installing any software, always inspect the folder for files named README.TXT, INSTALL.TXT, or something similar. These files may contain important information that is not included in this manual.

Auto-installing under Windows 98/ME/2000/XP

The Auto-install CD-ROM makes it easy for you to install the drivers and software for your motherboard.

If the Auto-install CD-ROM does not work on your system, you can still install drivers through the file manager for your OS (for example, Windows Explorer). Refer to the Utility Folder Installation Notes later in this chapter.

The support software CD-ROM disc loads automatically under Windows 98/ME/2000/XP. When you insert the CD-ROM disc in the CD-ROM drive, the autorun feature will automatically bring up the install screen. The screen has three buttons on it, Setup, Browse CD and Exit.



If the opening screen does not appear; double-click the file "setup.exe" in the root directory.

Setup Tab

Setup	Click the **Setup** button to run the software installation program. Select from the menu which software you want to install.
Browse CD	The **Browse CD** button is the standard Windows command that allows you to open Windows Explorer and show the contents of the support CD. Before installing the software from Windows Explorer, look for a file named README.TXT, INSTALL.TXT or something similar. This file may contain important information to help you install the software correctly. Some software is installed in separate folders for different operating systems, such as DOS, WIN NT, or WIN98/95. Always go to the correct folder for the kind of OS you are using. In install the software, execute a file named SETUP.EXE or INSTALL.EXE by double-clicking the file and then following the instructions on the screen.
Exit	The **EXIT** button closes the Auto Setup window.

Application Tab

Lists the software utilities that are available on the CD.

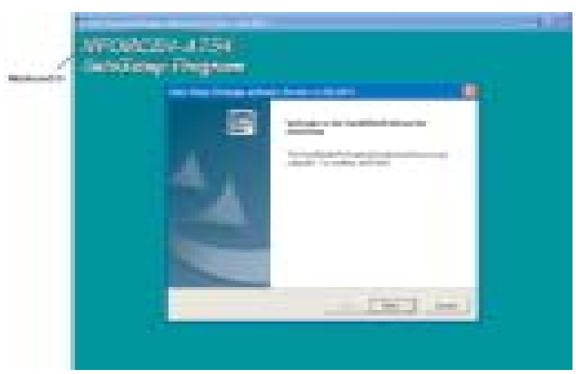
Read Me Tab

Displays the path for all software and drivers available on the CD.

Running Setup

Follow these instructions to install device drivers and software for the motherboard:

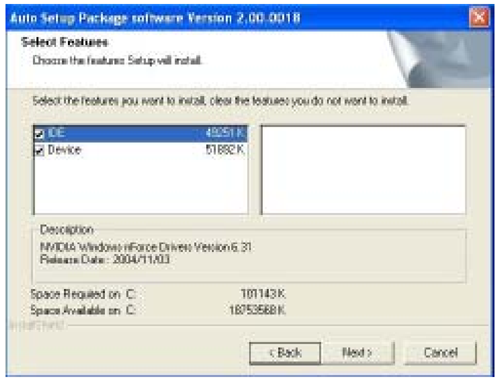
1. *Click **Setup**. The installation program begins:*



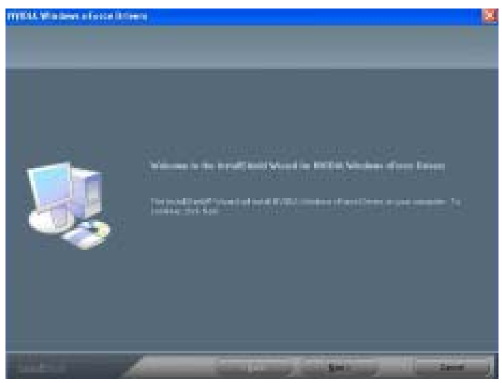
The following screens are examples only. The screens and driver lists will be different according to the motherboard you are installing.

The motherboard identification is located in the upper left-hand corner.

2. *Click **Next.** The following screen appears:*



3. *Check the box next to the items you want to install. The default options are recommended.*
4. *Click **Next** run the Installation Wizard. An item installation screen appears:*



5. *Follow the instructions on the screen to install the items.*

Drivers and software are automatically installed in sequence. Follow the onscreen instructions, confirm commands and allow the computer to restart a few times to complete the installation.

Manual Installation

Insert the CD in the CD-ROM drive and locate the PATH.DOC file in the root directory. This file contains the information needed to locate the drivers for your motherboard.

Look for the chipset and motherboard model; then browse to the directory and path to begin installing the drivers. Most drivers have a setup program (SETUP.EXE) that automatically detects your operating system before installation. Other drivers have the setup program located in the operating system subfolder.

If the driver you want to install does not have a setup program, browse to the operating system subfolder and locate the readme text file (README.TXT or README.DOC) for information on installing the driver or software for your operating system.

Utility Software Reference

All the utility software available from this page is Windows compliant. They are provided only for the convenience of the customer. The following software is furnished under license and may only be used or copied in accordance with the terms of the license.

These software(s) are subject to change at anytime without prior notice. Please refer to the support CD for available software.

AMI/AWARD Flash Memory Utility

This utility lets you erase the system BIOS stored on a Flash Memory chip on the motherboard, and lets you copy an updated version of the BIOS to the chip. Proceed with caution when using this program. If you erase the current BIOS and fail to write a new BIOS, or write a new BIOS that is incorrect, your system will malfunction. Refer to Chapter 3, Using BIOS *for more information.*

WinFlash Utility

The Award WinFlash utility is a Windows version of the DOS Award BIOS flash writer utility. The utility enables you to flash the system BIOS stored on a Flash Memory chip on the motherboard while in a Windows environment. This utility is currently available for WINXP\ME\2000\98SE. To install the WinFlash utility, run WINFLASH.EXE from the following directory: \UTILITY\WINFLASH 1.51

This concludes Chapter 4. Refer to the next chapter for information about SATA RAID Setup.

Caractéristiques

Processeur

Cette carte mère utilise un socket de 754 broches ayant les caractéristiques suivantes :

- Reçoit les CPU AMD Athlon 64 et Sempron
- Prend en charge l'interface de CPU HyperTransport de hautes performances

La Technologie HyperTransport™ est une liaison point à point entre deux matériels, elle permet à des circuits intégrés d'échanger des informations à des vitesses bien plus élevées que ne le permettent les technologies à interconnexions actuellement disponibles.

Chipset

Le NVIDIA® nForce4-4X comporte une seule puce avec une fiabilité et des performances prouvées.

- HyperTransport x16 liaisons haute et basse jusqu'à 1,0 GHz sur le CPU AMD Athlon 64 et Sempron
- Interface PCI 2.3, prenant en charge jusqu'à cinq logements PCI
- Deux contrôleurs SATA séparés avec PHYs intégrés, chacun prenant en charge deux lecteurs en mode maître
- IEEE 802.3 NVIDIA MAC pour 1000BASE-T/100BASE-T/10BASE-T Gigabit/Fast Ethernet/Ethernet
- USB 2.0 EHCI et USB 1.1 OHCI, prenant en charge jusqu'à dix ports
- Contrôleur Fast ATA-133 IDE
- Interface AC'97 2.3, prenant en charge la fonction S/PDIF directe et standard, fonctionnalité audio améliorée

Mémoire

- Trois sockets DIMM SDRAM DDR, 2.5V, 184 broches prenant en charge jusqu'à 2 Go
- Prend en charge les SDRAM DDR sans mémoire tampon DDR400/333/266/200

CODEC Audio AC'97

- CODEC full-duplex 16 bits avec vitesse d'échantillonnage de 48MHz
- Conforme aux spécifications AC'97 2.3
- Prend en charge la vitesse d'échantillonnage double (96KHz) de la lecture audio DVD
- Compatible Direct Sound 3D™

LAN interne (optionnel)

Le LAN interne offre les caractéristiques suivantes:

- Conforme 10/100/1000BASE-T IEEE 802.3
- Prend en charge les interfaces GMII, TBI, comptage de broches réduit GMII (RGMII), comptage de broches réduit TBI (RTBI), et série GMII (SGMII)
- Auto-Négotiation conforme IEEE 802.3u
- Empêche les paquets sortants avec adresses source IP usurpées et offre des capacités de journalisation/configuration

Options d'extension

La carte mère est livrée avec les options d'extensions suivantes:

- Un logement PCI Express x16
- Deux logements PCI Express x1
- Trois logements PCI 32 bits
- Deux embases IDE prenant en charge quatre périphériques IDE
- Une interface de lecteur de disquette
- Quatre connecteurs SATA à 7 broches

Cette carte mère prend en charge la maîtrise de bus Ultra DMA avec des vitesses de transfert de 133/100/66 Mo/s.

E/S intégrées

La carte mère possède un jeu complet de ports d'E/S et de connecteurs:

- Deux ports PS/2 pour souris et clavier
- Un port série
- Un port parallèle
- Quatre ports USB
- Un port LAN (optionnel)
- Prises audio pour microphone, ligne d'entrée et ligne de sortie

Microprogramme BIOS

La carte mère utilise Award BIOS qui permet aux utilisateurs de configurer de nombreuses caractéristiques du système comprenant les suivantes:

- Gestion de l'alimentation
- Alarmes de réveil
- Paramètres de CPU
- Synchronisation du CPU et de la mémoire

Le microprogramme peut aussi être utilisé pour définir les paramètres pour les vitesses d'horloges de différents processeurs.

Certaines spécifications matérielles et éléments de logiciels peuvent être modifiés sans avertissement.

Feature

Prozessor

Dieses Motherboard verwendet einen 754-Pin Socket mit den folgenden Eigenschaften:

- Nimmt AMD Athlon 64 und Sempron CPUs auf
- Unterstützt hochleistungsfähiges HyperTransport CPU-Interface

HyperTransport ™ Technologie ist ein Punkt-zu-Punkt Link zwischen zwei Geräten. Es ermöglicht integrierten Schaltkreisen einen Informationsaustausch mit wesentlich höherer Geschwindigkeit als bei gängigen Interconnect-Technologien.

Chipsatz

NVIDIA® nForce4-4X ist ein Single-Chip mit bewiesener Zuverlässigkeit und Leistung.

- HyperTransport x16 Up- und Down-Links mit bis zu 1.0 GHz zur AMD Athlon 64 und Sempron CPU
- PCI 2.3 Interface, unterstützt bis zu fünf PCI-Steckplätze
- Zwei separate SATA Controller mit integrierten PHYs, wobei jedes zwei Laufwerke im Master-Modus unterstützt
- IEEE 802.3 NVIDIA MAC für 1000BASE-T/100BASE-T/10BASE-T Gigabit/ Fast Ethernet/Ethernet
- USB 2.0 EHCI und USB 1.1 OHCI, unterstützen bis zu zehn Ports
- Fast ATA-133 IDE-Controller
- AC'97 2.3 Interface, unterstützt S/PDIFP Pass-Through-Funktion und Standard, erweiterte Audio-Funktionalität

Speicher

- Drei 184-Pin, 2.5V, DDR SDRAM DIMM-Sockets unterstützen bis zu 2 GB
- Unterstützt DDR400/333/266/200 ungepufferte DDR SDRAM

AC'97 Audio CODEC

- 16-Bit Stereo-Vollduplex CODEC mit einer Samplingrate von 48MHz
- Entspricht AC'97 2.3 Spezifikationen
- Unterstützt bei der DVD-Audiowiedergabe die doppelte Samplingrate (96KHz)
- Kompatibel mit Direct Sound 3D™

Integriertes LAN (optional)

Das integrierte LAN bietet folgende Features:

- Entspricht 10/100/1000BASE-T IEEE 802.3
- Unterstützt GMII, TBI, Reduced Pin-Count GMII (RGMII), Reduced Pin-Count TBI (RTBI) und serielle GMII (SGMII) Interfaces
- Auto-Negotiation gemäß IEEE 802.3u
- Verhindert das Aussenden von Datenpaketen mit gespooften IP-Herkunftsadressen und bietet Protokoll-/Konfigurationsfähigkeiten

Erweiterungsoptionen

Das Motherboard bietet die folgenden Erweiterungsoptionen:

- Ein PCI Express x16 Steckplatz
- Zwei PCI Express x1 Steckplätze
- Drei 32-Bit PCI-Steckplätze
- Zwei IDE-Header, die vier IDE-Geräte unterstützen
- Ein Steckplatz für ein Diskettenlaufwerk
- Vier 7-Pin SATA-Stecker

Dieses Motherboard unterstützt Ultra DMA Bus-Mastering mit Transferraten von 133/100/66MB/s.

Integrierte I/O-Schnittstellen

Das Motherboard verfügt über einen kompletten Satz von I/O-Schnittstellen und Anschlüssen:

- Zwei PS/2-Schnittstellen für Tastatur und Maus
- Eine serielle Schnittstelle
- Eine parallele Schnittstelle
- Vier USB- Schnittstellen
- Eine LAN-Schnittstelle (optional)
- Audiobuchsen für Mikrofon, Line-In und Line-Out

BIOS Firmware

Dieses Motherboard setzt das Award BIOS ein, mit dem der Anwender viele Systemeigenschaften selbst konfigurieren kann, einschließlich der folgenden:

- Energieverwaltung
- Wake-up Alarm
- CPU-Parameter
- CPU- und Speichertiming

Mit der Firmware können auch Parameter für verschiedene Prozessortaktgeschwindigkeiten eingestellt werden.

Einige Hardware- und Software-Spezifikationen können jederzeit und ohne vorherige Ankündigung geändert werden.

Caratteristiche

Processore

La scheda madre utilizza una presa a 754 pin che offre le seguenti caratteristiche:

- Compatibilità con CPU AMD Athlon 64 e Sempron
- Supporto di interfaccia CPU HyperTransport a elevate prestazioni

La tecnologia HyperTransport™ consente il collegamento point-to-point fra due dispositivi e quindi un trasferimento di informazioni tra circuiti integrati molto più veloce di quanto sia possibile con le attuali tecnologie di interconnessione.

Chipset

Il single chip NVIDIA® nForce4-4X offre collaudata affidabilità e prestazioni sicure.

- Link Up e Down HyperTransport x16 a fino 1,0 GHz alla CPU AMD Athlon 64 e Sempron
- Interfaccia PCI 2.3 con supporto di fino a cinque slot PCI
- Due controller SATA separati con PHY integrati, ciascuno con supporto di due drive in modalità master
- MAC IEEE 802.3 NVIDIA per 1000BASE-T/100BASE-T/10BASE-T Gigabit/Fast Ethernet/Ethernet
- EHCI USB 2.0 e OHCI USB 1.1 con supporto di fino a dieci porte
- Controller IDE ATA-133 a elevata velocità
- Interfaccia AC'97 2.3 con supporto di funzione pass-through S/PDIF e funzionalità audio potenziata standard

Memoria

- Tre prese DIMM per DDR SDRAM da 2,5 V a 184 pin con supporto di fino a 2 GB
- Supporto di DDR SDRAM DDR400/333/266/200 senza buffer

CODEC Audio AC'97

- CODEC full-duplex stereo a 16 bit con velocità di campionamento di 48 KHz
- Conforme alle specifiche AC'97 2.3
- Supporto di velocità di campionamento doppia (96 KHz) per la riproduzione audio di DVD
- Compatibile con Direct Sound 3D™

LAN integrata (opzionale)

La funzionalità LAN integrata sulla scheda offre le seguenti caratteristiche:

- Conforme a IEEE 802.3 10/100/1000BASE-T
- Supporto di interfacce GMII, TBI, GMII a ridotto numero di pin (RGMII), TBI a ridotto numero di pin (RTBI) e GMII seriali (SGMII)
- Auto-Negotiation conforme a IEEE 802.3u
- Impedisce la trasmissione di pacchetti con indirizzi IP sorgente contraffatti e offre funzionalità di registrazione/configurazione

Opzioni di espansione

La scheda madre è dotata delle seguenti opzioni di espansione:

- Uno slot PCI Express x16
- Due slot PCI Express x1
- Tre slot PCI a 32 bit
- Due connettori IDE per il supporto di 4 componenti IDE
- Un'interfaccia per unità disco floppy
- Quattro connettori SATA a 7 pin

La scheda madre supporta la funzionalità di bus mastering Ultra DMA con velocità di trasferimento di 133/100/66 MB/s.

I/O integrati

La scheda madre offre una serie completa di porte e connettori I/O:

- Due porte PS/2 per mouse e tastiera
- Una porta seriale
- Una porta parallela
- Quattro porte USB
- Una porta LAN (opzionale)
- Prese jack audio per microfono, line-in e line-out

Firmware BIOS

La scheda madre si avvale del BIOS Award che consente la configurazione personalizzata di molte funzionalità del sistema, tra cui:

- Gestione dell'alimentazione
- Allarmi di attivazione
- Parametri CPU
- Sincronizzazione di CPU e memoria

Il firmware consente inoltre di impostare i parametri per diverse velocità di clock del processore.

Alcune specifiche hardware e voci di software possono essere modificate senza preavviso.

Característica

Procesador

Esta placa principal usa un zócalo de 754-pin que lleva las sigtes. características:

- Acomoda CPUs AMD Athlon 64 y Sempron
- Soporta la interfaz HyperTransport CPU de alto rendimiento

La Tecnología HyperTransport ™ es un vínculo punto a punto entre dos dispositivos, habilita circuitos integrados para intercambiar la información en velocidades más rápidas que las tecnologías de interconexión disponibles actualmente.

Chipset

El NVIDIA® nForce4-4X es un chip singular con fiabilidad y rendimiento comprobados.

- Los vínculos arriba y abajo de HyperTransport x16 en hasta 1.0 GHz para la CPU AMD Athlon 64 y Sempron
- Interfaz PCI 2.3, que soporta hasta cinco ranuras PCI
- Dos controladores SATA separados con PHYs integrados, cada uno soporta dos unidades en el modo máster
- IEEE 802.3 NVIDIA MAC para 1000BASE-T/100BASE-T/10BASE-T Gigabit/Fast Ethernet/Ethernet
- USB 2.0 EHCI y USB 1.1 OHCI, soporta hasta diez puertos
- Controlador Fast ATA-133 IDE
- Interfaz AC'97 2.3, que soporta la función y norma pass-through S/PDIF, la funcionalidad de audio mejorada

Memoria

- Tres zócalos DDR SDRAM DIMM de 184-pin, 2.5V soportan hasta 2 GB
- Soporta DDR SDRAM DDR400/333/266/200 sin buffer

CODEC de audio AC'97

- CODEC de full-duplex estéreo de 16-bit con índice de muestreo de 48MHz
- Conformidad con las especificaciones AC'97 2.3
- Soporta doble índice de muestreo (96KHz) de reproducción de audio DVD
- Compatible con Direct Sound 3D™

LAN Abordo (optativo)

El LAN abordo provee las sigtes. características:

- Conformidad 10/100/1000BASE-T IEEE 802.3
- Soporta GMII, TBI, GMII (RGMII) de cuenta de pin reducida, TBI (RTBI), e interfaces de GMII (SGMII) serial
- Autonegociación con conformidad IEEE 802.3u
- Previene paquetes salientes con direcciones de la fuente IP y provee capacidades registro/configuración

Opciones de Expansión

La placa principal viene con las sigtes. opciones de expansión:

- Una ranura PCI Express x16
- Dos ranuras PCI Express x1
- Tres ranuras PCI de 32-bit
- Dos cabezales IDE que soporta cuatro dispositivos IDE
- Una interfaz de la unidad de disco floppy
- Cuatro conectores SATA de 7-pin

Esta placa principal soporta Ultra DMA bus mastering con índices de transferencia de 133/100/66MB/s.

I/O Integrado

La placa principal tiene un juego completo de puertos y conectores I/O:

- Dos puertos PS/2 para ratón y teclado
- Un puerto serial
- Un puerto paralelo
- Cuatro puertos USB
- Un puerto LAN (optativo)
- Clavijas de audio para micrófono, entrada y salida de línea

BIOS Firmware

La placa principal usa Award BIOS que habilita usuarios para configurar muchas características de sistema que incluyen las sigtes:

- Administración de Alimentación
- Alarmas para despertar
- Parámetros de CPU
- Cronometraje de CPU y de memoria

También se lo puede usar el firmware para configurar los parámetros para diferentes velocidades de reloj de procesador.

Algunas especificaciones de hardware e ítems de software son sujetos a cambio sin aviso previo.

Características

Processador

Esta motherboard usa uma ficha de 754 pin que possui as seguintes características:

- Acomoda CPUs AMD Athlon 64 e Sempron
- Suporta interface CPU com Hiper-Transporte e de elevada performance

Tecnologia de HyperTransport™ Té um link ponto-a-ponto entre dois dispositivos, permite circuitos integrados para trocar informação a velocidades muito mais elevadas que as disponíveis actualmente em tecnologias de interconexão.

Conjunto de Chips

O NVIDIA® nForce4-4X é um chip único com fiabilidade e performances provadas.

- Hiper-Transporte x16 links para cima e para baixo até 1.0 GHz para o CPU AMD Athlon 64 e Sempron
- Interface PCI 2.3, suportando até cinco ranhuras PCI
- Dois controladores SATA separados com PHYs integrados, cada um suportando duas drives em modo master
- IEEE 802.3 NVIDIA MAC para 1000BASE-T/100BASE-T/10BASE-T Gigabit/Ethernet Rápida/Ethernet
- USB 2.0 EHCI e USB 1.1 OHCI, suportando até dez portas
- Controlador ATA-133 IDE rápido
- Interface AC'97 2.3, suportando funções de passagem S/PDIF e com uma funcionalidade áudio melhorada, standard

Memória

- Fichas três 184 pinos, 2.5V, DDR SDRAM DIMM que suportam até 2 GB
- Suporta DDR400/333/266/200 sem buffers DDR SDRAM

Codec Áudio AC'97

- CODEC duplex total Estéreo de 16 bits com taxa de amostragem de 48MHz
- Cumpre com as especificações AC'97 2.3
- Suporta taxa de amostragem dupla (96KHz) de reprodução áudio DVD
- Compatível com Direct Sound 3D™

Onboard LAN (opcional)

O onboard LAN fornece as seguintes características:

- Compatível com 10/100/1000BASE-T IEEE 802.3
- Suporta GMII, TBI, contagem reduzida de pinos GMII (RGMII), contagem reduzida de pinos TBI (RTBI), e interfaces de série GMII (SGMII)
- Auto-Negociação compatível com IEEE 802.3u
- Previne pacotes de saída com endereços de origem IP com dados falsificados e fornece capacidades de configuração/logging

Português

Opções de Expansão

A motherboard é fornecida com as seguintes opções de expansão:

- Uma ranhura PCI Express x16
- Duas ranhuras PCI Express x1
- Três ranhuras PCI de 32 bit
- Dois colectores IDE que suportam quatro dispositivos IDE
- Um interface com drive de disco flexível
- Quatro conectores SATA de 7 pin

Esta motherboard suporta mastering bus Ultra DMA com taxas de transferência de 133/100/66MB/s.

I/O Integrado

A motherboard possui um conjunto completo de portas I/O e conectores:

- Duas portas PS/2 para rato e teclado
- Uma porta de série
- Uma porta paralela
- Quatro portas USB
- Uma porta LAN (opcional)
- Fichas áudio para microfone, entrada de linha e saída de linha

Microprogramação BIOS

Esta motherboard usa Award BIOS que permitem aos utilizadores configurar muitas características do sistema incluindo as seguintes:

- Gestão de corrente
- Alarmes de despertar
- Parâmetros CPU
- Temporização de memória e CPU

A microprogramação poderá ser também usada para estabelecer parâmetros para diferentes velocidades de relógio do processador.

Algumas especificações de hardware e itens de software poderão ser sujeitos a alteraçõessem aviso prévio.

機能

プロセッサ

このマザーボードには、次の機能を持った754ピンソケットが一つあります：

- AMD Athlon 64 と Sempron プロセッサ取り付け可能
- 高性能HyperTransport プロセッサ・インターフェースに対応

HyperTransport™技術とは、二つのデバイスを1対1(point-to-point)で接続する技術であり、従来のインターコネクト技術に比較して、集積回路同士の情報交換を高速化します。

チップセット

NVIDIA® nForce4-4X はシングルチップのもので、実証済みの信頼性と高性能性を提供します。

- HyperTransport x16でAMD Athlon 64 と Sempron プロセッサとの1.0 GHzのアップリンクとダウンリンクを実現
- PCI 2.3インターフェースで最大5つまでのPCIスロットをサポート
- 2つの独立したSATA コントローラのそれぞれが内蔵型PHYを搭載し、マスターモードのドライブを2つサポート
- 1000BASE-T/100BASE-T/10BASE-T Gigabit/Fast Ethernet/EthernetのIEEE 802.3 NVIDIA MAC
- USB 2.0 EHCI とUSB 1.1 OHCIで最大10個のポートをサポート
- 高速 ATA-133 IDE コントローラ
- AC'97 2.3 インターフェースで、S/PDIF pass-through機能や標準/強化音声機能をサポート

メモリ

- 3つの184-pin, 2.5V, DDR SDRAM DIMM ソケットで最大2 GBまで取り付け可能
- DDR400/333/266/200非バッファーDDR SDRAMをサポート

AC'97 Audio CODEC

- 48MHzサンプリングレートの16ビットステレオ全二重CODEC
- AC'97 2.3 規格に準拠
- DVD音声再生のダブルサンプリングレート(96KHz)に対応
- Direct Sound 3D™ に対応

オンボードLAN (オプション)

オンボードLANは、次の機能を提供します。

- 10/100/1000BASE-T IEEE 802.3に準拠
- GMII、TBI、reduced pin count GMII (RGMII)、reduced pin count TBI (RTBI)、およびシリアルGMII (SGMII) インターフェースに対応
- IEEE 802.3u 準拠の自動折衝機能を導入済み
- 悪意なIPアドレスが含まれているパケットの出力や履歴の記録、構成の設定が可能

日本語

拡張オプション

本マザーボードでは、次の拡張機能が利用できます。

- PCI Express x16 スロット x1
- PCI Express x1 スロット x2
- 32ビットPCIスロット x3
- IDEヘッダー x2 (4つのIDEデバイスの接続を可能)
- フロッピーディスクドライブインターフェイス x1
- 7ピンSATAコネクタ X4

このマザーボードは、133/100/66MB/秒の転送速度でのUltra DMA/バスマスタリングをサポートします。

統合の入出力ポート

マザーボードには、次のI/Oポートやコネクタを揃えています。

- マウスとキーボード用のPS/2ポート x2
- シリアルポート x1
- パラレルポート x1
- USBポート x4
- LANポート x1(オプション)
- マイク、ラインイン、ラインアウト用オーディオジャック

BIOSファームウェア

本マザーボードはAward BIOSを採用し、次の機能を含む多様なシステムの構成ををサポートします。

- 電源管理
- ウェークアップアラーム
- CPUパラメータ
- CPUとメモリとのタイミング

さらに、所定のパラメータを設定することによって、プロセッサのクロック速度を変更することもできます。

一部のハードウェア仕様とソフトウェアアイテムは、予告なしに変更することがあります。

특성

프로세서

본 마더보드는 다음과 같은 특성을 지닌 754핀 소켓을 사용합니다:

- AMD 애슬론 64및Sempron CPU 사용
- 고성능 HyperTransport CPU 인터페이스 지원

HyperTransport ™ 기술은 두 장치간의 point-to-point 링크로, 집적 회로가 기존의 상호 연결 기술 보다 더 빠른 속도로 정보를 교환할 수 있다.

칩셋

NVIDIA® nForce4-4X 는 신뢰성과 성능을 인정 받은 싱글 칩이다.

- AMD 애슬론 64 및Sempron 최고 1.0 GHz 로 CPU HyperTransport x16 업 앤 다운 링크
- PCI 2.3 인터페이스, 최대 5 개의 PCI 슬롯 지원
- 통합 PHY 를 지닌 2 개의 분리된 SATA 컨트롤러, 각기 마스터 모드의 두 개의 드라이브 지원
- 1000BASE-T/100BASE-T/10BASE-T 기가바이트/패스트 이더넷/이더넷 용 IEEE 802.3 NVIDIA MAC
- USB 2.0 EHCI 및 USB 1.1 OHCI, 최대 10 개의 포트 지원
- Fast ATA-133 IDE 컨트롤러
- AC'97 2.3 인터페이스, S/PDIF pass-through 기능 및 표준, 강화 오디오 기능성 지원

메모리

- 3 개 184 핀, 2.5V, DDR SDRAM DIMM 소켓, 최대 2 GB 지원.
- DDR400/333/266/200 unbuffered DDR SDRAM 지원

AC'97 오디오 코덱

- 48MHz 샘플링 속도를 지닌 16 비트 스테레오 풀-듀플렉스 코덱
- AC'97 2.3 사양 부합
- DVD 오디오 재생 시 더블 샘플링 속도 (96KHz) 지원.
- Direct Sound 3D™ 호환

보드 내장 LAN (선택 사항)

보드 내장 LAN 은 다음과 같은 특성이 있다:

- 10/100/1000BASE-T IEEE 802.3 부합
- GMII, TBI, reduced pin count GMII (RGMII), reduced pin count TBI (RTBI), serial GMII (SGMII) 인터페이스 지원
- IEEE 802.3u 부합 Auto-Negotiation
- 위장 IP 소스 어드레스로 전송 패킷 방지 및 로깅/구성 기능 제공

확장 옵션

본 마더보드의 확장 옵션은 다음과 같다:

- PCI Express x16 슬롯 1 개
- PCI Express x1 슬롯 2 개
- 32 비트 PCI 슬롯 3 개
- 4 개의 IDE 장치를 지원하는 IDE 헤더 2 개
- 플로피 디스크 드라이브 인터페이스 1 개
- 7 핀 SATA 커넥터 4 개

본 마더보드는 전송 속도 133/100/66MB/s 로 Ultra DMA 버스 마스터링을 지원한다.

통합 I/O

본 마더보드는 풀 셋트의 I/O 포트 및 커넥터가 있다:

- 마우스 및 키보드용 PS/2 포트 2 개
- 시리얼 포트 1 개
- 패러럴 포트 1 개
- USB 포트 4 개
- LAN 포트 1 개 (선택 사항)
- 마이크, 라인 입력 및 라인 출력용 오디오 잭

BIOS 펌웨어

본 마더보드는 다음과 같은 시스템 특성을 구성할 수 있는 Award BIOS 를 사용한다:

- 전원 관리
- Wake-up 알람
- CPU 파라미터
- CPU 및 메모리 타이밍

펌웨어로 다른 프로세서 클록 속도의 파라미터를 설정할 수도 있다.

몇 하드웨어 사양 및 소프트웨어 아이템은 사전 통보 없이 변경될 수 있습니다.

功能

處理器

本主機板配備具有如下功能的754針插槽:

- 適用於AMD Athlon 64 及 Sempron 處理器；
- 支援高效能HyperTransport 處理器介面。

HyperTransport™技術為以點對點方式連接兩台設備的技術，藉此，積體電路間能夠以後高於現有各種內部連接技術(interconnect technology)技術的速度來交換資訊。

晶片組

NVIDIA® nForce4-4X 採單晶片設計，具有令人贊賞的可靠性及效能。

- HyperTransport x16，其提供對AMD Athlon 64 及 Sempron 處理器高達1.0GHz上行及下行連接；
- PCI 2.3介面，其支援高達5個PCI插槽；
- 2個獨立的SATA 控制器，其具有整合型PHY，各自能夠支援2個master模式的硬碟；
- 1000BASE-T/100BASE-T/10BASE-T Gigabit/Fast Ethernet/Ethernet的IEEE 802.3 NVIDIA MAC；
- USB 2.0 EHCI 及USB 1.1 OHCI，其支援高達10個USB埠；
- 高速ATA-133 IDE控制器；
- AC'97 2.3介面，支援S/PDIF的pass-through功能以及標準型/增強型的音訊功能。

記憶體

- 3 個184-pin，2.5V，DDR SDRAM DIMM 插槽，最高可安裝容量2 GB
- 支援 DDR400/333/266/200非緩衝DDR SDRAM。

AC'97 音頻編碼器

- 16位元立體聲全雙工CODEC，取樣率48MHz
- 相容於AC'97 2.3 規格
- 支援DVD音訊播放的雙取樣率(96KHz)
- Direct Sound 3D™ 相容

內建區域網路 (選購)

內建區域網路提供下列功能：

- 相容於10/100/1000BASE-T IEEE 802.3；
- 支援GMII、TBI、接腳精簡(reduced pin count)型GMII (RGMII)、接腳精簡型；TBI (RTBI)、及序列GMII (SGMII)介面；
- IEEE 802.3u相容自動交涉功能；
- 防止內含惡意IP位址的封包輸出，並提供履歷記錄/組態設定功能。

擴充選項

本主機板包括下列擴充選項：

- 1個PCI Express x16插槽
- 2個PCI Express x1 插槽
- 3 個 32-bit PCI 插槽；
- 2 個 IDE 接頭，支援 4個 IDE 裝置；
- 1 個軟碟機介面；
- 4個7針SATA插頭。

本主機板支援傳輸率133/100/66 MB/秒下的Ultra DMA 匯流排主控功能。

整合 I/O

主機板具有一組齊全的 I/O 連接埠及連接頭：

- 2 個 PS/2 埠，供滑鼠與鍵盤使用；
- 1 個串列埠；
- 1 個平行埠；
- 4 個USB埠；
- 1 個區域網路埠(選購)；
- 麥克風音頻插座、線級輸入及線級輸出。

BIOS 韌體

本主機板使用Award BIOS，使用者可以組態設定許多系統功能，包括如下：

- 電源管理；
- 喚醒警鈴；
- CPU參數；
- CPU及記憶體的時脈定時。

此外，也可藉由參數的設定，調整處理器的時脈速度。

部份硬體規格和軟體內容可能會在未經通知的情況下更動，敬請見諒。

功能

处理器

主板使用一个 754-pin 插座，此插座具有以下特点：

- 支持 AMD Athlon 64 和 Sempron CPU
- 支持高性能 HyperTransport CPU 接口

HyperTransport™ 技术是一种在两台设备间进行点到点连接的技术，它可以让集成电路使用比当前互连技术更高的速度进行信息交换。

芯片组

NVIDIA® nForce4-4X 是一种能提供高可靠性和高性能的单芯片。

- HyperTransport x16 技术，到 AMD Athlon 64 和 Sempron CPU 的上行链路和下行链路带宽可达 1.0 GHz
- PCI 2.3 接口，支持 5 个 PCI 插槽
- 2 个带有集成 PHY 的独立 SATA 控制器，每个控制器在主模式下支持 2 个驱动器
- 用于 1000BASE-T/100BASE-T/10BASE-T 千兆/高速以太网/以太网的 IEEE 802.3 NVIDIA MAC
- USB 2.0 EHCI 和 USB 1.1 OHCI，最多支持 10 个端口
- 高速 ATA-133 IDE 控制器
- AC'97 2.3 接口，支持 S/PDIF 传递功能和标准、增强音频功能

内存

- 3 个 184 线 2.5V，DDR SDRAM DIMM 插槽，内存最大可支持 2 GB
- 支持 DDR400/333/266/200非缓冲DDR SDRAM

AC'97 音频编解码器

- 具有 48MHz 采样速率的 16 位全双工 CODEC（编解码器）
- 兼容 AC'97 v2.3 规格
- 支持 DVD 音频播放的双采样速率 (96KHz)
- 符合 Direct Sound 3D™ 规格

Onboard LAN（可选）

板上集成的 LAN 提供以下功能：

- 符合 10/100/1000BASE-T IEEE 802.3 标准
- 支持 GMII、TBI、减引线数 GMII (RGMII)、减引线数 TBI (RTBI) 和串行 GMII (SGMII) 接口
- 符合 IEEE 802.3u 标准的自协商功能
- 防止带有欺骗性 IP 源地址的外出包，提供记录/配置功能

扩展选项

此主板提供如下扩展选项：

- 1 个 PCI Express x16 插槽
- 2 个 PCI Express x1 插槽
- 3 个 32 位 PCI 扩展插槽
- 2 个 IDE 接口，可支持 4 个 IDE 设备
- 1 个软驱接口
- 4 个 7-pin SATA 接口

主板支持 Ultra DMA 总线控制，传输速率可达 133/100/66MB/s。

集成 I/O

此主板具有完整的 I/O 端口和插孔：

- 2 个用于连接鼠标和键盘的 PS/2 端口
- 1 个串口
- 1 个并口
- 4 个 USB 端口
- 1 个 LAN 端口（可选）
- 麦克风、线入和线出声音插孔

BIOS

此主板使用 Award BIOS，可以让用户自己配置以下系统功能：

- 电源管理
- 唤醒报警
- CPU 参数
- CPU 和记忆定时

还可用于设置不同处理器时钟速度的参数。.

某些硬件规格和软件项目若有更改恕不另行通知。

Характеристики

Процессор

Плата использует сокет 754-pin и обладает следующими характеристиками:

- Размещает процессоры AMD Athlon 64 и Sempron
- Поддерживает высокоэффективный интерфейс HyperTransport

Технология HyperTransport ™ обеспечивает связь двух устройств по протоколу point-to-point, позволяя гораздо более быстрый обмен информацией между интегральными микросхемами, чем тот, который обеспечивается существующими технологиями.

Чипсет

NVIDIA® nForce4-4X – это единая микросхема, характеризующаяся высокой надежностью и производительностью.

- Технология HyperTransport x16 обслуживает процессоры AMD Athlon 64 и Sempron со скоростью до 1.0 ГГц
- Интерфейс PCI 2.3 поддерживает до пяти слотов PCI
- Два раздельных контроллера SATA интегрированными PHY поддерживают каждый по два дисковода в режиме master
- IEEE 802.3 NVIDIA MAC для 1000BASE-T/100BASE-T/10BASE-T Gigabit/Fast Ethernet/Ethernet
- USB 2.0 EHCI и USB 1.1 OHCI с поддержкой до 10 портов
- Контроллер Fast ATA-133 IDE
- Интерфейс AC’97 2.3 с поддержкой функции S/PDIF и стандартного расширенного аудиовыхода

Память

- Три 184-штырьковых сокета 2.5V, DDR SDRAM DIMM с поддержкой до 2 ГБ памяти
- Поддержка небуферизованной памяти SDRAM DDR400/333/266/200

AC’97 Аудио CODEC

- 16-битный стерео CODEC (полный дуплекс) с частотой сэмплирования 48 МГц
- Совместимость со спецификацией AC’97 2.3
- Поддержка двойной скорости сэмплирования аудиовыхода DVD (96 кГц)
- Совместимость с Direct Sound 3D™

Встроенный сетевой адаптер LAN (опционально)

Встроенный сетевой адаптер LAN обладает следующими характеристиками:

- Совместимость с технологией 10/100/1000BASE-T IEEE 802.3
- Поддержка интерфейсов GMII, TBI, RGMII, RTBI, а также серийного интерфейса SGMII
- Совместимость с технологией IEEE 802.3u Auto-Negotiation
- Предотвращает формирование фиктивных адресов IP выходящих пакетов и позволяет осуществлять регистрацию и конфигурацию

Возможности расширения

Существуют следуюшие опции расширения данной материнской платы:

- Один слот PCI Express x16
- Два слота PCI Express x1
- Три 32-битовых слота PCI
- Два разъема IDE с поддержкой четырех устройств IDE
- Один разъем для накопителя на гибких дисках
- Четыре разъема 7-pin SATA

Плата поддерживает захват управления шиной Ultra DMA со скоростью передачи 133/100/66МБ/с.

Интегрированный вход/выход

Плата снабжена полным набором портов входа/выхода и разъемов:

- Два порта PS/2 для подключения мыши и клавиатуры
- Один серийный порт
- Один параллельный порт
- Четыре порта USB
- Один порт LAN (опционально)
- Гнездо для подключения микрофона, гнезда аудио-входа и выхода

BIOS

Плата работает под Award BIOS, который позволяет пользователю конфигурировать различные характеристики системы:

- Управление питанием
- Сигналы пробуждения системы
- Параметры CPU
- Время доступа для CPU и памяти

BIOS допускает также установку параметров для различных частот процессора.

Некоторые параметры платы и характеристики ее программного обеспечения могут быть изменены без предварительного уведомления.

Cechy

Procesor

Ta płyta główna zaopatrzona jest w podstawkę dla procesorów z 754 nóżkami i charakteryzuje się następującymi cechami:

- Przystosowany do obsługi procesorów Athlon 64 i Sempron firmy AMD
- Obsługuje szybki interfejs procesorów HT (HyperTransport CPU)

Technologia HiperTransportu™ jest protokołem komunikacji między dwoma urządzeniami, który umożliwia układom zcalonym wymieniać informację z dużo większymi szybkościami niż dotychczas stosowane technologie wzajemnych połączeń.

Chipset

nForce4-4X firmy NVIDIA® jest pojedynczym układem o sprawdzonej niezawodności i funkcjonalności.

- HyperTransport x16 obsługuje procesory AMD Athlon 64 i Sempron z szybkościami do 1.0 GHz.
- Interface PCI w wersji 2.3 obsługuje do pięciu gniazd PCI.
- Dwa oddzielne kontrolery SATA zintegrowanymi PHY, z których każdy obsługuje dwa urządenia w trybie master
- IEEE 802.3 NVIDIA firmy MAC dla obsługi 1000BASE-T/100BASE-T/10BASE-T Gigabit/Fast Ethernet/Ethernet
- Obsługuje do dziesięciu gniazd USB 2.0 EHCI i USB 1.1 OHCI.
- Kontroler dysków Fast ATA-133 IDE
- Interface AC'97 w wersji 2.3 obsługuje wszystkie funkcje standardu S/PDIF, podwyższając funkcjonalność audio

Pamięć

- Trzy 184-nóżkowe gniazda są zdolne obsłużyć do 2 GB pamięci 2.5V, DDR SDRAM DIMM
- Obsługuje niebuforowaną pamięć DDR SDRAM z szybkościami DDR400/333/266/200

AC'97 audio CODEC

- 16 bitowe full-duplex CODEC z częstotliwością próbkowania 48MHz.
- Zgodne ze specyfikacją AC'97 w wersji 2.3
- DVD audio playback obsługuje z podwójną częstotliwością próbkowania (96KHz)
- Zgodny z Direct Sound 3D™

Zintegrowana obsługa sieci LAN (opcjonalnie)

Zintegrowana obsługa sieci LAN posiada następujące właściwości:

- Zgodne z IEEE 802.3 - 10/100/1000BASE-T
- Obsługuje interfejsy: GMII, TBI, RGMII, RTBI i szeregowy SGMII.
- Zgodny z IEEE 802.3u Auto-Negotiation
- Zapobiega generowaniu fikcyjnych adresów IP źródła wychodzących pakietów i zapewnia możliwość rejestracji i konfiguracji.

Możliwości rozbudowy

Płyta główna wyposażona jest w następujące gniazda:

- Jedno gniazdo PCI Express x16.
- Dwa gniazda PCI Express x1
- Trzy 32-bitowe gniazda PCI
- Dwa złącza IDE obsługujące cztery urządzenia IDE.
- Jedno złącze obsługujące stacje dyskietek
- Cztery 7-nóżkowe złącza SATA

Płyta główna obsługuje magistralę Ultra DMA o szybkościach przesyłu 133/100/66MB/s.

Zintegrowane We/Wy

Płyta główna wyposażona jest w pełny zestaw gniazd i złączy We/Wy:

- Dwa gniazda PS/2 dla myszy i klawiatury
- Jedno gniazdo szeregowe
- Jedno gniazdo równoległe
- Cztery gniazda USB
- Jedno gniazdo LAN (opcjonalnie)
- Gniazdo wejściowe mikrofonowe, gniazdo wejściowe i wyjściowe dzwięku (audio)

Firmowy BIOS

Płyta główna wyposażona jest w BIOS firmy Award, który pozwala użytkownikowi konfigurować wiele cech systemu włączając w to następujące właściwości:

- Zarządzanie poborem mocy
- Alarmy typu Wake-up
- Parametry pracy procesora
- Ustalenia szybkoœci pracy procesora i pamiêci

BIOS może być używany do ustalania parametrów wpływających na szybkości pracy zegara procesora.

Niektóre parametry dotyczące płyty i jej oprogramowania mogą ulec zmianie bez uprzedniego powiadomienia.

Vlastnosti

Procesor

Tato základní deska využívá 754kolíkovou patici nabízející následující vlastnosti:

- Podpora procesoru AMD Athlon 64 a Sempron
- Podpora vysoce výkonného rozhraní HyperTransport CPU

Technologie HyperTransport ™ je přímým spojením mezi dvěma zařízeními, umožňující integrovaným obvodům výměnu informací vyššími rychlostmi, než jaké nabízejí současné technologie.

Čipová sada

Čipová sada NVIDIA® nForce4-4X je vybavena jedním čipem s ověřenou spolehlivostí a výkonem.

- Technologie HyperTransport x16 v obousměrném přenosu s frekvencí až 1,0 GHz s podporou procesorù AMD Athlon 64 a Sempron
- Rozhraní PCI 2.3, podporující až pìt slotù PCI
- Dva samostatné řadiče SATA s integrovanými PHY, každý podporující dvě diskové mechaniky v režimu Master
- Rozhraní IEEE 802.3 NVIDIA MAC pro síťovou komunikaci 1000BASE-T/100BASE-T/10BASE-T Gigabit/Fast Ethernet/Ethernet
- Rozhraní USB 2.0 EHCI a USB 1.1 OHCI, podporující maximálnì deset portù
- Řadič Fast ATA-133 IDE
- Rozhraní AC'97 2.3, podporující funkci S/PDIF s vylepšenou funkèností

Paměť

- Tři 184kolíková patice DDR SDRAM DIMM 2,5 V, podporující pamì do kapacity až 2 GB
- Podpora pamìtí typu DDR SDRAM 400/333/266/200, bez vyrovnávací pamìti

Zvukový kodek AC'97

- 16bitový stereo plnì duplexní kodek se vzorkovací frekvencí 48 MHz
- Splňuje požadavky standardu AC'97 2.3
- Podpora dvojnásobné vzorkovací frekvence (96 kHz) pro přehrávání DVD audio
- Kompatibilita s Direct Sound 3D™

Vestavění síťové rozhraní LAN (volitelně)

Vestavěné síťové rozhraní LAN nabízí následující možnosti:

- Podpora standardu 10/100/1000BASE-T IEEE 802.3
- Podpora GMII, TBI, GMII (RGMII) s redukovaným poètem kolíkù, TBI (RTBI) s redukovaným poètem kolíkù a sériové rozhraní GMII (SGMII)
- Podpora IEEE 802.3u s automatickým vyjednáváním
- Zabraòuje vysílání odchozích paketù s klamnou IP zdrojovou adresou a poskytuje funkci protokolování/konfigurování

Možnosti rozšíření

Základní deska je dodávána s následujícími možnostmi rozšíření

- Jedna patice PCI Express x16
- Dvì patice PCI Express x1
- Tři 32bitové patice PCI
- Dva konektory IDE, podporující připojení až 4 zařízení IDE
- Jedno rozraní pro disketovou mechaniku
- Čtyři 7kolíkové konektor SATA

Tato základní deska podporuje řízení sběrnice Ultra DMA s přenosovými rychlostmi 133/100/66 MB/s.

Integrovaný vstup/výstup

Základní deska je vybavena kompletní sadou vstupních portů a konektorů I/O:

- Dva porty PS/2 pro myš a klávesnici
- Jeden sériový port
- Jeden paralelní port
- Čtyři porty USB
- Jeden port LAN (volitelně)
- Zvukové konektory pro mikrofon, zvukový vstup a výstup

Firmware BIOS

Základní deska využívá BIOS formy Award, který uživateli umožňuje nakonfigurovat mnoho systémových parametrů, včetně následujících:

- Řízení spotřeby
- Alarmy při spouštění systému
- Parametry CPU
- Časování CPU a paměti

Firmware může být rovněž použit k nastavení parametrů pro různé taktovací frekvence procesoru.

Některé technické parametry hardware a software se mohou měnit bez předchozího upozornění.

Caracteristici

Procesorul

Această placă de bază utilizează un soclu 939, având următoarele caracteristici:

- Funcționează cu unități centrale AMD Athlon 64 şi Sempron
- Suportă interfață CPU HyperTransport de înaltă performanță

Tehnologia HyperTransport™ este o legătură punct-la-punct între două aparate, care permite viteze mult mai mari de schimb al informațiilor între circuitele integrate, decât cel asigurat de tehnologiile de interconectare actuale.

Setul de chipuri

NVIDIA® nForce4-4X este un singur chip, cu fiabilitate şi randament dovedite.

- Conexiuni în sus şi în jos HyperTransport de 16x la viteză de cel mult 1,0 GHz la unitatea centrală AMD Athlon 64 şi Sempron
- Interfață PCI 2.3, cu suport pentru până la cinci sloturi PCI
- Doi controleri independenți SATA cu PHY integrat, fiecare cu suport pentru două unități în mod master
- IEEE 802.3 NVIDIA MAC pentru 1000BASE-T/100BASE-T/10BASE-T Gigabit/Fast Ethernet/Ethernet
- USB 2.0 EHCI şi USB 1.1 OHCI, cu suport pentru până la zece porturi
- Controler rapid ATA-133 IDE
- Interfață AC'97 2.3, cu suport pentru funcția pass-through S/PDIF şi funcții audio standard, îmbunătățite

Memoria

- Trei socluri DDR SDRAM DIMM de 2,5 V şi 184 ace, cu capacitate maximă de 2 GB
- Suport pentru module DDR SDRAM DDR400/333/266/200 fără zonă tampon

AC'97 Audio CODEC

- CODEC de 16 biți stereo cu duplex complet şi viteză de eşantionare de 48 MHz
- Compatibil cu specificația AC'97 2.3
- Suport pentru viteză dublă de eşantionare (96 kHz) pentru redare audio de pe DVD
- Compatibil cu Direct Sound 3D™

Onboard LAN (opţional)

Onboard LAN are următoarele caracteristici:

- Compatibil cu 10/100/1000BASE-T IEEE 802.3
- Suport pentru GMII, TBI, GMII (RGMII) cu număr redus de ace, TBI (RTBI) cu număr redus de ace şi interfețe seriale GMII (SGMII)
- Auto-negociere compatibilă cu IEEE 802.3u
- Împiedică ieşirea unor pachete cu adresă IP sursă falsificată şi oferă posibilități de jurnalizare/configurare

Opțiuni de extindere

Placa de bază este dotată următoarele posibilități de extindere:

- Un slot PCI Express de 16x
- Două sloturi PCI Express de 1x
- Trei sloturi PCI de 32 biți
- Două conectoare IDE care suportă patru unități IDE
- O interfață pentru unitate floppy
- Patru conectoare SATA 7

Această placă de bază suportă Ultra DMA bus mastering cu viteza de transfer de 133/100/66MB/s.

I/O integrată

Placa de bază este dotată cu un set complet de porturi şi conectoare I/O:

- Două porturi PS/2, pentru mouse şi tastatură
- Un port serial
- Un port paralel
- Patru porturi USB
- Un port LAN (opțional)
- Mufe audio pentru microfon, intrare şi ieşire audio

Firmware BIOS

Placa de bază utilizează Award BIOS, care permite utilizatorului să configureze mai mulți parametri ai sistemului, cum ar fi:

- Gestionarea energiei
- Alarme de trezire
- Parametri CPU
- Temporizare CPU şi memorie

Acest firmware poate fi utilizat şi pentru a seta parametrii diferitelor frecvențe de comandă ale procesorului.

Anumite specificații hardware şi elemente de software pot fi modificate fără înştiințare prealabilă.

Спецификация

Процесор

Тази дънна платка използва 754-щифтов цокъл (754-pin socket) със следните параметри:

- Поддръжка на процесори AMD Athlon 64 и Sempron
- Поддръжка на високопроизводителен интерфейс HyperTransport

Технологията HyperTransport™ е връзка точка-до-точка (point-to-point) между две устройства, която предоставя възможност интегрираните вериги да обменят информация на много по-висока скорост от досегашно съществуващите технологии.

Чипсет

Чипсет с доказана производителности и надеждност NVIDIA® nForce4-4X.

- HyperTransport x16 up/down връзки на скорост до 1.0 GHz към процесор AMD Athlon 64 и Sempron
- Интерфейс PCI 2.3 с поддръжка до пет PCI слота
- Два отделни SATA контролера с интегрирани PHY, всеки поддържащ две устройства в режим master
- Контролер IEEE 802.3 NVIDIA MAC поддържащ 1000BASE-T/100BASE-T/10BASE-T Gigabit/Fast Ethernet/Ethernet
- Контролери USB 2.0 EHCI и USB 1.1 OHCI с поддръжка до 10 порта
- Контролер Fast ATA-133 IDE
- Интерфейс AC'97 2.3 с поддръжка на функцията S/PDIF pass-through и подобрена аудио функционалност

Памет

- три 184-pin, 2.5V, DDR SDRAM DIMM с поддръжка на общ капацитет до 2 GB
- Поддръжка на модули DDR400/333/266/200 небуферирана DDR SDRAM

AC'97 Audio CODEC

- 16-bit Stereo full-duplex CODEC с честота 48MHz
- Съвместимост със спецификацията AC'97 2.3
- Поддръжка на двойна честота (96KHz) при възпроизвеждане на DVD audio
- съвместимост с Direct Sound 3D™

Интегриран мрежов контролер (опция)

Спецификация на интегрирания мрежов контролер:

- Съвместимост с 10/100/1000BASE-T IEEE 802.3
- Поддръжка на интерфейси GMII, TBI, reduced pin count GMII (RGMII), reduced pin count TBI (RTBI), и serial GMII (SGMII)
- Функция Auto-Negotiation съвместима със спецификацията IEEE 802.3u
- Спира изходящите пакети с фалшиви първоначални IP адреси и осигурява възможности за водене на наблюдение и настройка

Възможности за разширяване

Дънната платка има следните разширителни възможности:

- Един слот PCI Express x16
- Два слота PCI Express x1
- три 32-bit PCI слота
- Два колектора IDE с поддръжка на четири IDE устройства
- един конектор за флопидисково устройство
- четири 7-щифтови SATA конекторas

Дънната платка поддържа шина Ultra DMA 133/100/66MB/s.

Интегриран Вход/Изход контролер

Дънната платка има пълен набор от I/O портове и конектори:

- два PS/2 порта за мишка и клавиатура
- един сериен порт
- един паралелен порт
- четири USB порта
- един LAN порт (опция)
- Аудио жакове за микрофон, линеен вход и линеен изход

BIOS Firmware

Дънната платка използва Award BIOS с възможност за различни системни настройки, включително

- управление на захранването
- Wake-up аларми
- параметри на процесора
- синхронизиране на процесора и паметта

настройка на скоростта на часовника на процесора

Хардуерните и софтуерни спецификации и параметри могат да бъдат изменени без предупреждение.

Jellemző

Processzor

Ez az alaplap 754 tűs foglalattal rendelkezik, ennek jellemzői pedig a következők:

- AMD Athlon 64 és Sempron központi egységekkel működik
- Nagy teljesítményű HyperTransport technológiás központi egység interfész

A HyperTransport™ technológia egy ponttól pontig való kapcsolat két készülék között, és segítségével az integrált áramkörök közötti információcsere sebessége sokkal nagyobb, mint a jelenleg rendelkezésre álló összekapcsolási technológiák esetében.

Lapkakészlet

Az NVIDIA® nForce4-4X bizonyított megbízhatóságú és teljesítményű egyetlen lapka.

- 16-szoros HyperTransport fölfelé és lefelé irányuló, akár1,0 GHz-es sebességű kapcsolat az AMD Athlon 64 és Sempron központi egységhez
- PCI 2.3 interfész, akár öt PCI foglalattal
- Két független SATA vezérlő integrált PHY-vel, amelyek két-két meghajtót támogatnak master módban
- IEEE 802.3 NVIDIA MAC 1000BASE-T/100BASE-T/10BASE-T Gigabit/ Fast Ethernet/Ethernetszámára
- USB 2.0 EHCI és USB 1.1 OHCI, akár tíz foglalat támogatására
- Gyors ATA-133 IDE vezérlő
- AC'97 2.3 interfész, S/PDIF áthaladási funkció és standard, bővített audio funkciók támogatása

Memória

- Három 184 tűs, 2,5 V-os DDR SDRAM DIMM foglalat, maximum 2 GB kapacitással
- Puffer nélküli DDR400/333/266/200 DDR SDRAM memóriaegységek támogatása

AC'97 Audio CODEC

- 16 bites sztereo teljes duplex CODEC 48 MHz-es mintavételezési sebsséggel
- Megfelel az AC'97 2.3-as specifikációnak
- Dupla mintavételezési arányú (96 kHz) DVD audio lejátszást teszt lehetővé
- Kompatibilis a Direct Sound 3D™ technológiával

Alaplapon levő LAN (választható)

Az alaplapon levő LAN jellemzői:

- 10/100/1000BASE-T IEEE 802.3-vel kompatibilis
- GMII, TBI, csökkentett tűszámú GMII (RGMII), csökkentett tűszámú TBI (RTBI) és soros GMII (SGMII) interfészek támogatása
- IEEE 802.3u-val kompatibilis automatikus kezelő
- Megakadályozza hamisított IP forráscímmel rendelkező csomagok kimenését és naplózási/konfigurálási lehetőségeket kínál

Bővítési lehetőségek

Az alaplap a következő bővítési lehetőségekkel rendelkezik:

- Egy 16-szoros PCI Express foglalat
- Két 1-szeres PCI Express foglalat
- Három 32 bites PCI foglalat
- Két IDE csatlakozó négy IDE eszköz támogatására
- Egy hajlékonylemez meghajtó interfész
- Négy 7 tűs SATA csatlakozó

Ez az alaplap a 133/100/66MB/s átviteli sebességű Ultra DMA ’bus mastering’ megoldást is támogatja.

Beépített I/O

Az alaplapot az I/O portok és csatlakozók teljes készletével szerelték fel:

- Két PS/2 port az egér és a billentyűzet számára
- Egy soros port
- Egy párhuzamos port
- Négy USB port
- Egy LAN port (választható)
- Audio csatlakozók mikrofon, bemenet és kimenet számára

BIOS Firmware

Az alaplapon levő Award BIOS segítségével a felhasználó a rendszer sok paraméterét állíthatja be, például:

- Energiagazdálkodás
- Ébresztési riasztások
- CPU paraméterek
- CPU és memória időzítés

A firmware segítségével a processzor órajel-frekvenciáinak paramétereit is beállíthatják.

Bizonyos hardverjellemzők és szoftverelemek előzetes bejelentés nélkül módosulhatnak.